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CONTENTS AND SUBJECT INDEX

Nervous Injury Produced by Sulfanilamide and Some of Its Derivatives in the Chicken. Raymond N. Bieter, M.D.; A. B. Baker, M.D.; J. Gordon Beaton, B.S.; James M. Shaffer, B.S.; Thomas M. Seery, M.S., and Burton A. Orr, A.B., Minneapolis 2231

The Interrelation of Neurology, Psychiatry and Psychoanalysis. Roy R. Grinker, M.D., Chicago...2236

Use of Digitalis to Prevent Exaggerated Acceleration of the Heart. Walter Modell, M.D.; Harry Gold, M.D., and Harold H. Rothendler, M.D., New York.....2241

The Formation of Renal Calculi in Bedridden Patients. Montague L. Boyd, M.D., Atlanta, Ga. 2245

Effects of Intrathecal Injection of Iodized Oil. A. W. Marcovich, M.D.; A. Earl Walker, M.D., and C. M. Jessico, M.D., Chicago.2247

Chronic Granulocytopenia Caused by Excessive Splenic Lysis of Granulocytes. R. O. Muether, M.D.; L. T. Moore, M.D.; J. W. Stewart, M.D., and G. O. Broun, M.D., St. Louis 2255

CLINICAL NOTES, SUGGESTIONS AND NEW INSTRUMENTS

Stomatitis Venenata and Dermatitis of the Anal Orifice from Chewing Poison Ivy Leaves. Seymour H. Silvers, M.D., Brooklyn.....2257

Dermatitis Due to Parachlormetacresol. W. H. Guy, M.D., and F. M. Jacob, M.D., Pittsburgh 2258

A Simple Hemoglobin-Red Blood Cell Ratio to Replace the Color Index. Raphael Isaacs, M.D., Chicago 2258

The Typhoid Carrier State Treated with Sulfaguanidine. J. Elliott Levi, M.D., and Abner Willen, M.D., Baltimore 2258

SPECIAL ARTICLE

Sulfathiazole-Winthrop Contaminated with Phenobarbital: I. Introduction. Morris Fishbein, M.D., Chicago. II. Clinical Aspects. Austin E. Smith, M.D., Chicago. Chemical Examination. A. E. Sidwell Jr., Ph.D., and A. R. Menotti, Ph.D., Chicago 2259

THERAPEUTICS

Therapy of the Cook County Hospital: Edited by Dr. LeRoy H. Sloan: The Therapy of Influenza. George W. Scupham, M.D., Chicago 2264

COUNCIL ON PHYSICAL THERAPY 2268

COUNCIL ON PHARMACY AND CHEMISTRY

Bacteriophage Therapy. Albert Paul Krueger, M.D., and E. Jane Scribner, Ph.D., Berkeley, Calif....2269

EDITORIALS

Diet of the American Soldier..2278

Case Finding in Tuberculosis..2278

CURRENT COMMENT

Impaired Judgment from Sulfanilamide 2279

U. S. v. A. M. A. et Al.....2280

Tuberculous Diathesis.....2280

Mixtures Containing Acetanilid.2280

(Subject Index on next page)

MEDICAL PREPAREDNESS 2281

ORGANIZATION SECTION 2285

A.M.A. SESSION CLEVELAND JUNE 2-6, 1941

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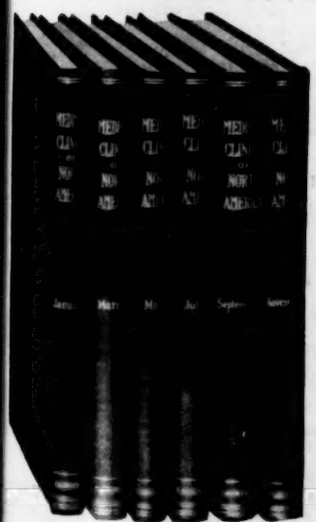

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See Also SAUNDERS ADVERTISEMENT on Pages 3, 4, 5

SUBJECT INDEX TO THIS ISSUE

The letters used to explain in which department the matter indexed appears are as follows: The Star (*) indicates an Original Article; "ab," abstract; "E," Editorial; "C," Correspondence; "Ml," Medicolegal; "ME," Medical Economics; "OS," Organization Section; "SS," Student Section.

A. M. A., on trial....E-2280; OS-2285
reservations at Cleveland....2324
Abscess, bacteriophage for....*2274
Accidents, sulfanilamide role in....E-2279
Acetanilid, proprietary mixtures....E-2280
Allen, J. G., surgical award to....2326
Allergy, serum sickness....2353
American Academy of Tuberculosis Physicians....2329
Association for Surgery of Trauma....2329
College of Chest Physicians....2329
Congress of Physical Therapy....2327; 2328
Diabetes Association 1st meeting....2329
Eugenics Society....2329
Heart Association....2329
Ophthalmological Society....2329
Therapeutic Society....2329
Anemia, Isaacs formula....*2258
Anus, dermatitis from chewing poison ivy leaves....*2257
Aortic regurgitation in bus driver....2353
Arsphenamine, disazoaphthol derivative....2331
Association News....2324
Asthma, pertussis vaccine for....2353
Auricular Fibrillation, digitalis in....*2241
Bacteriophage therapy....*2269
Bedridden patients, renal calculi in....*2245
Blood calcium: parathyroid tumors....ab-2345
gonadotropins in, estimation....2354
insulin hypoglycemia....ab-2350
plasma in centri-vacs....ab-2343
sulfanilamide compounds in....*2231
Board Examinations....2336
Bone marrow in Paget's disease....ab-2348
Book Notices....2351
Books Received....Adv. page 38
Bottles, labeling, dermatitis from....*2258
Brain cortex-hypothalamus relationship....*2239
injury, anosmia after....2354
sulfonamide compounds in....*2234
tumors, frontal lobectomy in....ab-2339
tumors, in aged....ab-2340
Breast, chronic cystic mastitis and cancer..2354
Bronchiolitis, acute, in children....ab-2347
Bureau of Legal Medicine and Legislation..2337
California Physicians' Service....OS-2322
Cancer in mentally ill....ab-2345
potassium salts cause?....2354
Cannon, W. B., Friedenwald medal to....2327
Carbuncle, bacteriophage for....*2272
Case history, jargon in....C-2335
Chloride index of polluted water....2354
Chlorinated hydrocarbon, D'Oilene A....2354
*para*Chlormetacresol dermatitis from....*2258
Cholera, bacteriophage for....*2270
Color Blindness, total familial....ab-2350
Correspondence....2335
Council on Pharmacy and Chemistry....2269
Council on Physical Therapy....2268
Death, sudden....ab-2349
Deaths....2332
Diet of American soldier....E-2278
Digitalis in auricular fibrillation....*2241
Dimitri, Vicente, appointment....2331
D'Oilene A, degreasing agent....2354
Duodenum hemorrhage, blood-urine in...ab-2347
hemorrhage, aluminum hydroxide for..ab-2339
Dysentery, bacteriophage for....*2270
outbreak, Carrollton, Illinois....2326
Dysmenorrhea, amphetamine sulfate in..ab-2344
Emory U., Whitehead Pavilion....2325
Emotions and hypothalamus....*2239
Endometriosis, pathogenesis....ab-2348
Ephedrine in pancreatitis....ab-2348
Erythrocyte-hemoglobin formula....*2258
European War, gas attack....2330
physical therapy mobile unit....2330
Polish Medical School opened....2330
St. Thomas's Hospital destruction....2330
total casualties....2330
Exercise, exaggerated heart action after..*2241
Eyes, lymphogranuloma venereum....ab-2341
Fetus, vagina smears and ovary....ab-2346
First Aid course, Iowa....2326
Fletcher, Emerson A., honored....2328
Foreign Letters....2330
Fracture Day, annual, Flint, Mich....2327
Furunculosis, bacteriophage for....*2272
Gastrointestinal roentgen study....C-2336
Globin a histone?....C-2336
Gonadotropins in blood, estimating....2354
Gonorrhea, bacteriophage for....*2277
Granulocytopenia, chronic....*2255
Gray, Wm., veteran pharmacist retires....2326
Group Health Association, Inc..E-2280; OS-2285
Heart disease, thyroidectomy for....ab-2340
disease in children....2331
disease, New York state program....2327
insufficiency, sudden death....ab-2349
rate (exaggerated), digitalis to prevent.*2241
Helium, guarding supply, U. S....2284
Hemoglobin-erythrocyte formula....*2258
Highland Park Spring Clinic....2327
Histone or globin insulin?....C-2336
Hospital, St. Thomas's destroyed....2330
Howard U., Dr. Lawlah new dean....2325
Hudson, C. S., Borden award to....2325
Hypothalamus-cortex relationship....*2239
Industrial dermatosis from labeling bottles.*2258
hazard of aortitis in bus driver....2353
hazard of D'Oilene A....2354
hazard of sulfanilamide treatment....E-2279
psittacosis in birdhouse employee....2325
skin irritation in welder....2354
Infants, vagina smears in....ab-2346
Infectious Diseases, bacteriophage for....*2269
Influenza, treatment at Cook County....*2264
Insulin, globin a histone?....C-2336
hypoglycemia, levulose and dextrose in.ab-2350
zinc linked to....C-2336
Iodized Oil, intrathecal injection....*2247
Iris changes in syphilis....ab-2346
Isaacs hemoglobin formula....*2258
Judgment, sulfanilamide impairs....E-2279
Karsner, H. T., lectures by....2325
Kidney calculi in bedridden....*2245
sulfonamide compounds in....*2234
Laboratory technicians wanted, Calif....2325
Lawlah, J. W., new Howard dean....2325
Legislation, Medical....2324
Library of Sir D'Arcy Power for sale..C-2335
Medical Library Association....2329
Liver atrophy from sulfanilamide....ab-2342
sulfonamide compounds in....*2234
Lung cancer....2331
Lymphogranuloma Venereum, ocular....ab-2341
Marriages....2331
Marsal, Alberto, appointment....2331
Medical Economic Abstracts....2322
Medical Examinations and Licensure....2336
Medical Preparedness....2281
diet of American soldier....E-2278
National Nutrition Conference....2284
Naval Medical Corps examinations....2284
officers ordered to active duty....2281
Medical Service, California Physicians'..OS-2322
plans, Ohio; Texas....OS-2323
Medicolegal Abstracts....2337
Meetings, Coming Meetings....2329; 2338
Meninges, subdural hematoma....ab-2340
Meningitis, epidemic, sulfathiazole for..ab-2347
staphylococcic, bacteriophage for....*2275
Menstruation, delayed, prostigmine for..C-2335
Mental Disease, cancer in....ab-2345
Mental Hygiene program, Ala....2325
Navy, U. S., examination for appointments.2284
Neuritis, peripheral, after sulfanilamide..*2231
Neurology relation to psychiatry....*2236
Neurosyphilis, fever, vaccines, etc., for..ab-2342
Neutrophils, excessive splenic lysis....*2255
News....2325
Nurses, smoking; use of makeup....2330
Nursing school at Michigan....2327
Nutrition department, Argentina....2331
National Conference for Defense....2284
Ohswaldt, Herman F., town honors....2328
Old Age, brain tumors in....ab-2340
Organization Section....2285
Osteitis deformans, marrow in....ab-2348
fibrosa cystica, mineral metabolism in..ab-2349
Ovary and vaginal smears....ab-2346
Pancreatitis, ephedrine in....ab-2348
Parathyroid tumor, hypercalcemia from..ab-2345
tumor, mineral metabolism....ab-2349
Paternity: blood grouping tests....Ml-2337
Patients, bedridden, renal calculi in....*2245
Pediatrics, graduate course, Ky....2326
Peptic Ulcer, hemorrhage, aluminum hydroxide for....ab-2339
hemorrhage, Meulengracht diet....ab-2345; ab-2350
magnesium trisilicate in....ab-2339
Peritonitis, bacteriophage for....*2275
Phenobarbital contaminated sulfathiazole..*2259
Physical Examination of children, Mo..OS-2323
Physical Examination, unauthorized, liability....Ml-2338
Physician a great ornithologist....2331
Doctors' Day: Atlanta *Constitution*....2325
family cooperates in school program....2323
ordered to active duty....2281
veteran, 20 honored, N. J....2327
Poliomyelitis pamphlet in Spanish....2329
renal calculi in bedridden....*2245
Polish Medical School at Edinburgh....2330
Population, air survey....2325
Porter (Langley) Clinic....2325
Potassium salts in softened water harmful?..2354
Power, D'Arcy, library for sale....C-2335
Pregnancy, diagnosis, prostigmine....C-2335
vagina smears in....ab-2346
Prizes, Borden Co. Award....2325
Chicago Surgical Society Award....2326
Friedenwald Medal....2327
Lilly Award....2327
Prostigmine methylsulfate for delayed menstruation....C-2335
Psittacosis in Washington, D. C....2325
Psychiatry, interrelation to neurology....*2236
Pennsylvania Society....2328
Queries and Minor Notes....2353
Radio Broadcasts....2324
Rhus leaves, chewing, causes stomatitis..*2257
Rittenberg, D., Lilly Award to....2327
Roentgenologist as consultant....C-2336
School health, family doctor cooperates....2323
Shock in combat zone....ab-2343
Skin, irritation in welder....2354
Smell, loss of, after brain injury....2354
Society Proceedings....2329; 2338
Soldier, rations for....E-2278
Spinal Canal, iodized oil injection....*2247
Spinal Cord, sulfonamides in....*2234
Spleen, excessive lysis of granulocytes..*2255
Staphylococcus infection, bacteriophage in.*2272
State Board Examinations....2336
Stomach hemorrhage, blood-urine in....ab-2347
hemorrhage, aluminum hydroxide for..ab-2339
Stomatitis from chewing poison ivy leaves.*2257
Sulfaguanidine for typhoid carrier....*2258
Sulfamethylthiazole, neuritis from....*2231
Sulfanilamide, nervous injury from....*2231
impairs judgment; role in accident....E-2279
toxic hepatitis....ab-2342
treatment of brucellosis....ab-2344
Sulfanilyl dimethyl-sulfanilamide neuritis.*2231
Sulfaphenylthiazole, neuritis from....*2231
Sulfapyridine, neuritis from....*2231
treatment of brucellosis....ab-2344
Sulfathiazole in epidemic meningitis....ab-2347
neuritis from....*2231
phenobarbital contaminated....*2259
Suppuration, bacteriophage for....*2272
Surgery, Chilean-American Congress....2331
Syphilis, iris changes in....ab-2346
new synthetic arsenical in....2331
Wassermann-fast....2353
Taste, loss of, after cerebral injury....2354
Terminology, medical jargon....C-2335
Tetanus antitoxin, serum sickness from?...2353
Therapy of Cook County Hospital....*2264
Thermometers, sterilization....2353
Thiamine overdosage; toxicity (correction)..2329
Thrombophlebitis, divide femoral-iliac...ab-2344
Thrombosis, coronary from intimal hemorrhages; vitamin C prevents....ab-2341
Thyroidectomy in heart disease....ab-2340
Ticehurst, C. B., a great ornithologist....2331
Tonics and Sedatives....Adv. page 32
Trypanosomiasis, new arsenical in....2331
Tuberculosis, case finding....E-2278
hereditary diathesis....E-2280
Indiana Association....2326
pulmonary, Monaldi's drainage....ab-2349
Tuskegee Institute, clinical meeting....2325
Typhoid, bacteriophage for....*2271
carrier, sulfaguanidine for....*2258
Undulant Fever, sulfonamides for....ab-2344
Urinary infections, bacteriophage for....*2270
Urine, phosphaturia in bedridden....*2245
Vagina smears and ovary function....ab-2346
Venereal Disease campaign, D. C....2325
Virus disease, symposium....2326
Vitamin C and coronary thrombi....ab-2341
multiple deficiency....ab-2348
Water, chloride index of pollution?....2354
softened, harmful to drink?....2354
Welding irritates skin....2354
Whisky bottles, labeling, dermatitis from..*2258
Whitehead Foundation gift to Emory....2325
Whooping Cough vaccine for asthma....2353
Zinc linked to insulin....C-2336

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NERVOUS INJURY PRODUCED BY SULFANILAMIDE

AND SOME OF ITS DERIVATIVES IN THE CHICKEN: PRELIMINARY REPORT

RAYMOND N. BIETER, M.D.
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AND
BURTON A. ORR, A.B.
MINNEAPOLIS

One of the toxic manifestations that has followed the clinical use of sulfanilamide and some of its derivatives is what has most commonly been called peripheral neuritis. Although not so dangerous or so frequent as certain other toxic symptoms produced by these drugs, this nervous phenomenon has given rise to a certain amount of concern and apprehension. Reactions of this nature are not unknown, for similar symptoms have been produced occasionally by other drugs, such as the arsphenamines.

Up to the present time little consideration from an experimental standpoint has been given to the pathologic effects that might arise from a toxic action of these drugs on the brain, the spinal cord and the peripheral nerves. Rosenthal [1] and Nelson [2] have conducted such a study with sulfanilamide and sulfanilyl sulfanilamide in the chicken and the rabbit. However, they felt that their data were inconclusive, even those obtained on the chicken, in which they observed the greatest injury.

In the study herein described six drugs, namely sulfanilamide, sulfapyridine, sulfathiazole, sulfamethylthiazole, sulfanilyl dimethyl-sulfanilamide (uliron) and sulfaphenylthiazole have been administered daily to young chickens with the aim of determining the extent and degree of injury, if any, produced on the nervous tissues previously mentioned. The first three drugs have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association,[3] and a nonproprietary name has been given to the fourth compound in the series by the Council.[4]

The clinical literature indicates that these drugs show wide variations in the number of chronic toxic nervous reactions which have been observed during therapeutic use. In 1938 Long and Bliss [5] noted 2 cases of possible peripheral neuritis caused by sulfanilamide. Since that time several other cases have been reported. Considering the extremely wide use of this drug, this low incidence is significant. Sulfapyridine and sulfathiazole, the uses of which have been more limited, apparently have not produced peripheral neuritis. On the other hand, Brown and his associates [6] at the Mayo Clinic observed 3 cases of possible peripheral neuritis among 106 patients treated with sulfamethylthiazole. Likewise, they [7] have observed 2 cases of possible peripheral neuritis among 70 patients treated with sulfanilyl dimethyl-sulfanilamide. Long and Bliss also recorded a number of cases of possible peripheral neuritis associated with therapy with sulfanilyl dimethyl-sulfanilamide. No data are available on the nervous effects of sulfaphenylthiazole because it has not been used clinically.

It was startling, therefore, to find that the trend of pathologic lesions herein observed in the chicken presented a rough parallel with this trend of clinical experience. Consequently our preliminary report of the work on the chicken is being made in order to ascertain, with the help of clinicians, to what extent this correlation may be true. If such a correlation is found to exist, the chicken might serve as an index as to whether a given drug is safe or moderately or severely dangerous for clinical use.

The chickens used in these experiments were single-combed white Leghorns, and they varied in age from 8 to about 26 weeks. In the laboratory most of the chickens were fed a commercial ground feed, namely "Purina Growena," although a few were maintained on whole grains. For the most part, the drugs were administered orally by stomach tube or in capsules, generally in doses of 0.5 or 1 Gm. per kilogram of body weight once a day. A few chickens received sulfapyridine and sulfathiazole orally in doses of 0.3 and 0.5 Gm. per kilogram of body weight at intervals of twelve hours. Doses were continued, as a rule, for periods of one or two weeks. Concentrations of the various drugs in the blood have been determined with the Bratton and

Aided by a grant from the Medical Research Fund of the Graduate School of the University of Minnesota.

From the Department of Pharmacology and the Division of Nervous and Mental Diseases, University of Minnesota Medical School.

Merck & Co., Inc., supplied the sulfapyridine and The Winthrop Chemical Company, Inc., supplied the sulfanilamide, sulfathiazole and the other derivatives used in the experiments on chickens.

1. Rosenthal, S. M.: Some Toxic Effects of Repeated Administration of Sulfanilamide and Sulfanilyl Sulfanilamide (Di-Sulfanilamide) to Rabbits and Chickens, Pub. Health Rep. **54:** 96-106 (Jan. 27) 1939.

2. Nelson, A. A.: Histopathologic Changes in Hens and Rabbits Following Administration of Sulfanilamide and Sulfanilyl Sulfanilamide (Di-Sulfanilamide), Pub. Health Rep. **54:** 106-127 (Jan. 27) 1939.

3. New and Nonofficial Remedies, Chicago, American Medical Association, 1940, pp. 489-497. Sulfathiazole, Report of the Council on Pharmacy and Chemistry, J. A. M. A. **116:** 308 (Jan. 25) 1941.

4. "Sulfathiazole" and "Sulfamethylthiazole" the Nonproprietary Names for 2-Sulfanilamidothiazole and 2-Sulfanilamido-4-Methylthiazole, Report of the Council on Pharmacy and Chemistry, J. A. M. A. **114:** 2387 (June 15) 1940.

5. Long, P. H., and Bliss, Eleanor A.: The Clinical and Experimental Use of Sulfanilamide, Sulfapyridine and Allied Compounds, New York, Macmillan Cmpany, 1939.

6. Brown, A. E., and Herrell, W. E.: Clinical Experience with Sulfamethylthiazole, Am. J. M. Sc. **200:** 618-632 (Nov.) 1940.

7. Bannick, E. G.; Brown, A. E., and Foster, F. P.: Therapeutic Effectiveness and Toxicity of Sulfanilamide, J. A. M. A. **111:** 770-776 (Aug. 27) 1938.

Marshall modification of Marshall's method.[8] The readings were made with a Duboscq microcolorimeter.

Table 1 presents the range of blood concentration determined at four, twelve and twenty-four hours after single oral daily doses of 0.5 Gm. per kilogram of body weight of each of the drugs. Despite the fact that the doses administered to the chickens were extremely high in comparison with clinical doses, the resulting levels of the drugs in the blood with the exception of that of sulfanilamide, were not greatly out of proportion to the concentrations obtained in clinical use. The concentrations of sulfanilamide in the blood, as was to be expected, were the highest of the group. Just as in other animals, this is probably due to a more complete absorption. Furthermore, after a few days cumulation tends to occur, probably because of an elimination which is slower than the absorption. Litchfield[9] and other investigators have also made this observation. It is to be noted that the concentrations of the six drugs in the blood differ one from another, although the administered doses of each were the same. This is probably due chiefly to variable rates of absorption, especially with sulfapyridine and sulfathiazole, a phenomenon noted by other investigators. Concentrations of the drugs in the blood after doses of 1 Gm. were somewhat higher and persisted through a greater part of each twenty-four hour period.

TABLE 1.—*Range of Concentrations in the Blood of the Chicken in Milligrams Per Hundred Cubic Centimeters of Blood*

	Times After Oral Administration of One Dose (0.5 Gm. per Kilogram of Body Weight) per Day*					
	4 Hours		12 Hours		24 Hours	
Drug	Free	Total	Free	Total	Free	Total
Sulfanilamide	10.8 to 54	17.4 to 64.2	9.5 to 61.5	20.0 to 68.1	4.5 to 57.6	10.2 to 75.6
Sulfapyridine	2.8 to 6.9	4.4 to 8.1	F.T. to 1.0	F.T. to 2.1	F.T. to T.	F.T. to 2.1
Sulfathiazole	2.8 to 4.1	3.5 to 4.9	T. to 1.8	T. to 3.3	F.T. to T.	F.T. to 1.6
Sulfamethylthiazole	4.5 to 15.6	5.6 to 20.7	1.2 to 4.9	2.5 to 6.6	0 to F.T.	T. to 2.1
Sulfanilyl dimethyl-sulfanilamide	F.T. to T.	1.2 to 2.3	0 to F.T.	F.T. to 1.0	0 to F.T.	F.T.
Sulfaphenylthiazole	2.2 to 8.8	3.3 to 12.5	1.7 to 7.4	2.9 to 12.1	2.0 to 7.4	2.7 to 10.1

* T. = approximately 0.5 to 1 mg.; F.T. = less than 0.5 mg.

The chickens were killed at the end of the period of medication, and immediately thereafter the brains, spinal cords and sciatic nerves were dissected out and placed in solution of formaldehyde. Sections of each of these tissues were stained with hematoxylin and eosin, Bodian stain for nerve fibers and axons and azocarmine for myelin. Sections of the peripheral nerves were cut in both cross and longitudinal sections. Table 2 presents a comparative summary of the severity of lesions observed in a series of 55 chickens, 6 of which were controls.

It can readily be seen that sulfanilamide produced the mildest injury. For the most part this consisted of a slight condensation of the myelin in the nerve sheaths of most of the chickens, beginning axonal swelling in 1 peripheral nerve and a slight injury of the myelin in 1 spinal cord. This mild injury confirms the changes observed by Nelson[2] with the same drug in the chicken. Next in extent of injury was that produced by sulfapyridine. The damage to the peripheral nerves was again patchy but more extensive. Geometric figures began to appear in the condensed myelin, and the swollen axons began to show bulblike formations. The injury to the spinal cord with this drug was slight. With sulfathiazole, the changes in the peripheral nerves were even more severe and occasionally irreversible. Fragmentation and vacuolation began to appear in both the myelin and the axons. Similar lesions were noted in the spinal cords and brains. In the latter there appeared endothelial proliferation of the walls of the blood vessels with narrowing of the vascular lumens. The three remaining drugs, sulfamethylthiazole, sulfanilyl dimethyl-sulfanilamide and sulfaphenylthiazole, respectively, produced an increasing degree of injury within the neural elements. The injury of normal nervous structure in the peripheral nerves reached its peak with sulfaphenylthiazole, with which complete destruction of all elements was produced in 2 of the 7 chickens. Similarly the effects on the spinal cord and the brain were most extensive. For example, in the brain the proliferative endarteritis often progressed to complete occlusion of the lumens of the vessels.

SUMMARY OF PATHOLOGIC DATA

Controls.—All nervous tissue was normal, except in 2 peripheral nerves in each of which an occasional area of mild condensation of myelin was observed.

Sulfanilamide.—The peripheral nerves in 4 out of 6 chickens showed small areas of condensation of myelin and a mild swelling of the axons in 1. One spinal cord presented slight destruction of the myelin sheaths in the posterior and lateral regions. All other elements of nervous tissue from these 6 chickens were normal.

Sulfapyridine.—The changes produced in tissue by this drug were similar to those produced by sulfanilamide. In 10 out of 11 chickens the myelin of the peripheral nerves presented an injury varying from a patchy swelling or a mild condensation to a more extensive condensation with the occasional appearance of geometric figures. In only 3 instances were the axons involved, i. e. occasional irregular swellings to more extensive bulblike formations with loss of tinctorial properties. One spinal cord showed slight injury consisting of swelling of myelin sheaths in the posterior columns. The brains were normal.

Sulfathiazole.—Every peripheral nerve presented some injury. Four showed a mild, patchy condensation of myelin with the appearance of an occasional truncated cone. In 2 of these 4 nerves the axons were normal; in the other 2 the axons showed mild swelling. In 4 other peripheral nerves more extensive condensation of myelin with formation of truncated cones was present together with occasional fragmentation and vacuolation. The axons of these nerves were also involved. In the remaining 3 nerves more extensive

8. Bratton, A. C., and Marshall, E. K., Jr.: A New Coupling Component for Sulfanilamide Determinations, J. Biol. Chem. **128:** 537-550 (May) 1939.

9. Litchfield, J. T., Jr.: The Effects of Sulfanilamide in the Lower Vertebrates, J. Pharmacol. & Exper. Therap. **67:** 212-223 (Oct.) 1939.

degenerative changes, such as the partial disappearance of both myelin and axons, were also present. In 6 of the 11 chickens the spinal cords showed the following injuries: swelling of the myelin sheaths and axons, demyelination, vacuolation and fragmentation of all neural elements and pyknosis of nerve cells. The brains of 4 chickens showed a patchy reduction in staining ability of the tissues, mild demyelination and swelling and proliferation of the endothelium of the walls of many of the vessels with a narrowing of the lumens of the vessels.

Sulfamethylthiazole.—All peripheral nerves were damaged. In 2 there occurred mild condensation of myelin and axonal swelling, while in 4 others there appeared either extensive swelling of the myelin or extensive condensation with the formation of geometric figures and beginning fragmentation and vacuolation. The axons often also showed swelling and occasional fraying and fragmentation. In 1 peripheral nerve the damage to the neural elements was extensive. Six spinal cords presented changes which varied from swelling of myelin and axons to demyelination and beginning vacuolation and finally extensive disruption of the neural elements. Four brains showed pyknosis and fragmentation of nerve cells, proliferative endarteritis of the cerebral vessels and the beginning formation of glial nodules.

Sulfanilyl Dimethyl-Sulfanilamide.—The peripheral nerves showed extensive injury. In addition to the milder reactions described previously, each nerve showed mild to extensive fragmentation and vacuolation involving both myelin and axons. Six spinal cords likewise presented extensive injury. In most instances this consisted of demyelination and vacuolation of the white substances and shrinkage of nerve cells. In 1 chicken, the normal structure of the cord was completely destroyed. In 6 instances the brains contained hyperchromatic, pyknotic and swollen nerve cells, a proliferation of the endothelium of the cerebral blood vessels and the formation of small glial nodules.

Sulfaphenylthiazole.—The most extensive injury to peripheral nerves was observed with this drug. Two chickens showed only a mild injury to the myelin with intact axons. Of the remaining 5, 2 presented a patchy, complete destruction of the normal structure while the other 3 showed an almost complete involvement of all the neural elements. In these, the myelin presented extensive condensation, fragmentation and vacuolation, and the axons showed extensive swelling, loss of staining properties, irregularities and fragmentation. Every spinal cord showed some injury, which in the cases of milder involvement consisted of loss of tinctorial properties and beginning demyelination and in cases of severe involvement chromatolysis of nerve cells, swelling and fragmentation of myelin and axons. Some injury was noted in every brain, consisting of pyknosis of nerve cells, extensive proliferative endarteritis with partial or complete occlusion of the smaller vessels and occasional areas of glial proliferation. All these changes will be reported in detail at a later date elsewhere.

Correlation of the pathologic data with symptoms observed in the chickens has been difficult. Although sulfanilamide produced the mildest pathologic injury, all the chickens given this drug showed great weakness, loss of balance and a tendency to squat. The chickens would stand erect if provoked. Apparently these symptoms must be due to some other factor. Similar symptoms have been noted in other animals and in man. All these chickens lost weight. The chickens receiving sulfapyridine and those receiving sulfathiazole presented few symptoms. Only 1 in each group was lethargic, and 4 receiving the former and 2 receiving the latter drug lost weight. All others gained weight. With sulfamethylthiazole, 3 chickens lost and 4 gained weight. Two presented weakness and a desire to squat. With sulfanilyl dimethyl-sulfanilamide, 2 lost and the others gained weight. Furthermore, 2 chickens were weak and walked with an unsteady gait. All chickens receiving sulfaphenylthiazole showed a great loss in weight. All presented weakness, coma and depression, and 2 were unable to stand even when provoked. These 2 chickens showed the most severe pathologic injury, namely a complete destruction of the normal structure of the sciatic nerve. Thus there was a clearcut correlation between symptoms and pathologic injury in only these 2 chickens. The lack of this correlation in all the other chickens is not particularly disturbing. McKinley [10] has shown that in the sciatic nerve the fasciculi fuse and divide throughout the course of the nerve, so that the peripheral bundles receive fibers from many sources. Thus, unless the sciatic nerve is severely involved—and this occurred in only 2 chickens—the function of the nerve can be carried on by the remaining fibers in the intact fasciculi.

TABLE 2.—*Comparative Pathologic Effects on the Central and Peripheral Nervous Systems in the Chicken*

Drug	Total No. of Chickens	Brain		Spinal Cord		Peripheral Nerves: Myelin		Peripheral Nerves: Axons	
		Degree of Injury	No. of Chickens	Degree of Injury	No. of Chickens	Degree of Injury	No. of Chickens	Degree of Injury	No. of Chickens
Control	6	0	6	0	6	0	4	0	6
						±	2		
Sulfanilamide	6	0	6	0	3	0	2	0	5
				+	1*	±	4	±	1
Sulfapyridine	11	0	11	0	10	0	1	0	8
				+	1	±	5	+	2
						+	2	++	1
						++	3		
Sulfathiazole	11	0	5	0	4	+	4	0	2
		+	3	+	2	++	4	+	2
		++	1*	++	3	+++	3	++	4
				+++	1*			+++	3
Sulfamethylthiazole	7	0	3	+	2	±	1	0	1
		+	1	++	2	+	1	+	2
		++	3	+++	2*	++	4	++	3
						+++	1	+++	1
Sulfanilyl dimethyl-sulfanilamide	7	0	1	0	1	++	2	++	2
		+	4	+	1	+++	4*	+++	4*
		++	2	++	2				
				+++	2				
				++++	1				
Sulfaphenylthiazole	7	+	4	±	1	+	1	0	2
		++	3	+	1	++	1	+++	3
				++	3	+++	3	++++	2
				+++	2	++++	2		

* Remainder of tissues not studied.

Key: 0 = normal. Damage probably reversible: + = occasional, patchy, slight alteration; + = mild, diffuse but reversible changes; ++ = moderate, diffuse injury with preservation of the normal structure but with occasional axonal involvement (sometimes nonreversible). Definitely nonreversible changes: +++ = moderately severe changes involving all structures with much injury of a permanent nature; ++++ = severe damage to all tissues with complete disruption of the normal structure.

10. McKinley, J. C.: The Intraneural Plexus of Fasciculi and Fibers in the Sciatic Nerve, Arch. Neurol. & Psychiat. **6**: 377 (Oct.) 1921.

From the standpoint of the experiments on chickens and the available clinical data on peripheral neuritis, it is our belief that any one of the drugs studied may occasionally produce nervous lesions. In support of this possibility, the following case of peripheral neuritis which may be associated with sulfathiazole is briefly described. To our knowledge no other has been reported to date.[11]

REPORT OF CASE

R. E. C., a white woman aged 37, in December 1935 had a furuncle on her left arm, which was drained. Subsequently, roentgenograms revealed an osteomyelitic involvement of the underlying bone. This process eventually healed, but a few months later a similar condition developed in her right ankle, and since then she has had involvements of the skull, the mandible, the left tibia and the left knee joint. She was treated with multiple injections and drainage.

On admission to the University Hospital in November 1939, the patient's blood showed 32 per cent hemoglobin, 1,550,000 red blood cells, and 8,000 white blood cells. The differential count showed 66 per cent polymorphonuclear leukocytes and 44 per cent mononuclear leukocytes. The patient was given liver and iron therapy, and she received several transfusions. The hemoglobin level eventually rose to 85 per cent.

The patient continued to show a mild toxic picture; her temperature ranged between 98 and 100.5 F. In April 1940 cultures of the blood were positive for staphylococci. Because of the positive cultures and the persistence of toxic symptoms, the patient was given sulfathiazole 1 Gm. every four hours. After eleven days the dose was reduced to 1 Gm. three times a day. One week later, it was further reduced to 1 Gm. daily. Five days later it was increased to 1 Gm. three times a day. After seventeen days the dose of sulfathiazole was again increased to 1 Gm. four times a day. This dose was continued until the middle of September. Thus over a period of five and one-half months the patient took a total dose of about 600 Gm. of sulfathiazole. In addition to this medication, she received 2 tablets of extralin four times a day, 100 mg. of ascorbic acid daily, and 5 mg. of thiamine hydrochloride daily. The patient's blood became sterile two weeks after she was given sulfathiazole. Determinations of the levels of the drug in her blood revealed a concentration of from 1.9 to 4.3 mg. of free sulfathiazole per hundred cubic centimeters and from 2.4 to 6.2 mg. of total sulfathiazole per hundred cubic centimeters of blood. Although the patient was discharged from the hospital on August 16, she continued to take sulfathiazole for another month under supervision.

Seven weeks after the sulfathiazole therapy was begun deafness suddenly developed in her left ear. On examination this proved to be deafness of a nervous type. A few days later weakness and numbness began to develop in her right lower extremity, primarily in the distribution of the peroneal nerve. Within a few days a complete foot-drop developed, with anesthesia over the lateral surface of the right lower limb.

Two weeks after discontinuing the medication she noticed for the first time a return of dorsal flexion of her right foot and improvement in her sensory involvement. Within a week she was able partially to flex her foot dorsad, and she was able to detect superficial sensation in the involved area. Examination of her hearing at this time revealed almost complete deafness, although the patient now had a return of osseous conduction over the involved ear. During and previous to the period during which her foot-drop developed she had had no osteomyelitic involvement in this extremity, all of her trouble being confined to the left lower limb. She did, however, have a large indurated mass on the posterior aspect of the right thigh which at no time broke down or drained.

11. Dr. E. T. Evans, Division of Orthopedics, University of Minnesota General Hospital, gave the authors permission to report this case.

In searching for a possible explanation for the injury to nervous tissue produced by the drugs, the concentrations of four of the drugs were determined in the various tissues. Similar data for the liver and kidneys were obtained. The chickens used were from the same hatch as those used before but they were from four to ten weeks older. The drugs were given orally as described previously. The dose was either 0.5 Gm. or 0.2 Gm. per kilogram of body weight given every twelve hours for one week or more. Autopsy was performed on the chickens twelve hours after the last dose was given. The tissues were extracted by a modification of the trichloroacetic acid method described by Marshall and Litchfield.[12] For determinations of the drugs in the blood, liver and kidneys a dilution of 1:30 was used, and for peripheral nerves, spinal cords and brains, the dilution was either 1:50 or 1:100. No corrective factors were employed in the data.[12a] The number of chickens used for these studies on drug distribution was for sulfanilamide 4, sulfapyridine 7, sulfathiazole 7 and sulfamethylthiazole 4.

TABLE 3.—*Analyses of Tissues of Chickens for Concentrations of Drugs in Milligrams Per Hundred Cubic Centimeters of Blood or Per Hundred Grams of Tissue*

Drug and Dose (for 7 Days)	Average Concentration in Blood *		Peripheral (Sciatic) Nerve		Spinal Cord		Brain		Liver		Kidneys	
	Free	Total	Free	Total	Free	Total	Free	Total	Free	Total	Free	Total
Sulfanilamide												
0.2 Gm. every 12 hours	12.3	20.0	41.6	60.0	52.5	52.5	16.4	31.7	27.7	49.5	38.4	44.2
Sulfapyridine												
(1) 0.2 Gm. every 12 hours	2.8	5.3	3.3	4.2	<1.0	<1.0	<1.0	<1.0	3.5	4.5	6.5	6.5
(2) 0.2 Gm. every 12 hours	3.4	5.2	37.4	44.8	1.4	2.2	1.0	1.8	2.6	3.6	3.7	3.7
Sulfathiazole												
(1) 0.5 Gm. every 12 hours	5.4	6.7	3.7	6.3	1.2	1.9	0.8	1.5	2.3	2.5	3.7	3.7
(2) 0.2 Gm. every 12 hours	4.1	4.8	37.4	40.6	1.0	1.0	<1.0	<1.0	8.3	9.0	26.4	26.4
Sulfamethylthiazole												
0.2 Gm. every 12 hours	10.7	13.4	13.3	19.2	2.0	2.7	1.6	2.0	24.3	24.3	23.3	23.3

* Average of four determinations per chicken: two at four hours and two at twelve hours after dosage.

The data on these 22 chickens show strikingly that the levels of these drugs in the organs studied show great variations from the average concentrations in the blood. Data are given in table 3 from only a few individual experiments. The highest and lowest concentrations of sulfapyridine and sulfathiazole observed in the periph-

12. Marshall, E. K., Jr., and Litchfield, J. T., Jr.: Some Aspects of the Pharmacology of Sulfapyridine, J. Pharmacol. & Exper. Therap. **67**: 454-475 (Dec.) 1939.

12a. Control analyses on blood, nervous tissue, liver and kidney have been negative except for an occasional faint trace (too small to read) in blood and liver. Quantitative recoveries, within the limits of the colorimetric method, have been obtained when known amounts of sulfapyridine, sulfathiazole and their acetyl derivatives have been added to blood, nervous tissue and liver. The extraction of acetyl derivatives added to the tissues is complicated by the fact that the concentration of trichloroacetic acid used hydrolyzes a portion of the drugs; for example, in peripheral nerve extractions this amounts to 20 per cent, and in liver to 40 per cent of the added drugs. If these corrections are applied, the trend of the experimental results is not changed.

eral nerves of the chicken are illustrated. With the former drug, every level in the peripheral nerves was higher than its respective average concentration in the blood, but the level in the peripheral nerves of only 1 chicken was above 15 mg. per hundred grams of tissue. With sulfathiazole, the level of the drug in the peripheral nerves was below the respective average level in the blood in 3 chickens, whereas in 3 other instances the level of the drug in the peripheral nerves was above 20 mg. per hundred grams of tissue. With sulfanilamide the concentrations in the nervous tissues of 3 chickens were equal to or above the respective

TABLE 4.—*Concentrations of Sulfathiazole*

Blood		Peripheral Nerve (Sciatic)		Liver		Kidneys	
Free	Total	Free	Total	Free	Total	Free	Total
15.7	39.5	22.8	33.0	34.2	41.8	60.0	109.5

levels in the blood. Except with sulfanilamide the concentrations found in the spinal cord and brain were always much below those in the blood.

A similar type of distribution with sulfathiazole can occur in man, at least in the presence of depressed renal function. Adequate samples of various tissues were obtained from a patient who was operated on for carcinoma of the stomach and died from postoperative pneumonia. This patient had almost total anuria during the last six days of his life. The level of the drug in the blood remained almost constantly at the figure given in table 4 during this period. The concentrations of the drug in milligrams per hundred cubic centimeters of blood or per hundred grams of tissue are shown in table 4.

Whether the observed variations in the concentrations of these drugs in the chicken and in man are due chiefly to a cumulation from repeated doses or whether a decreased glomerular function (glomerular development in the chicken is inferior to that in mammals [9]) is necessary or merely additive is unknown at present. However, with sulfapyridine in the dog even a few hours after single doses slight rises in the concentration of the drug, compared to levels in the blood, can be discerned in various organs and tissues such as the liver, the kidneys and the peripheral nerves.[13] Possibly a uniform distribution following repeated administration of certain of these drugs is more hypothetic than real.

COMMENT

It can be argued that the patient described here had a sufficiently extensive infection to account for her nervous involvement. This possibility is not denied. However, the occurrence of such localized nervous lesions, the presence of foot-drop (which has also been observed clinically with other drugs in this series,[14] and more especially with sulfamethylthiazole [6]), the sudden improvement after discontinuance of sulfathiazole therapy and the observation of corresponding types of lesions in the chickens all seem to us to be evidence that the drug was at least to some degree responsible for the patient's neural involvement.

On the one hand, it is evident that such a toxic reaction is a hazard. On the other, this hazard at the present time does not appear to be as dangerous for the patient as that presented by a serious infection which remains untreated.

It is to be emphasized that observations on the damage to nervous tissue produced by the various drugs of the sulfanilamide series studied in the chicken are not to be transferred directly to man. It should be emphasized that the chicken appears to be much more sensitive to the toxic effects of these drugs on the nervous system than is man. Furthermore, differences in species of animals have been noted, for Nelson [2] observed less injury, in his experiments, in rabbits than in chickens. Undoubtedly a similar type of injury, though much milder, as in the rabbit, can occur in man. The data in the literature seem to indicate that the frequency of peripheral neuritis in man places these drugs in a more or less systematic order similar to the classification determined by experiments in the chicken. It is hoped that with additional experimental and clinical evidence data obtained on the chicken may be of some use for a comparative evaluation of the effects of sulfanilamide and its derivatives on the nervous system.

It is not yet possible to state that any of the five drugs herein described which have been used clinically should not be used in man. There may be possible obscure contraindications, as yet unknown, for all of them. However, the question of the routine use of one or more of those producing the most serious injury is as yet practically answered in the negative. No one knows why these toxic nervous reactions occur, whether a hypersensitivity on the part of the patient is the chief predisposing factor or whether other factors are chiefly important. The tendency of certain of these drugs, at least, to accumulate in the peripheral nerves as compared with what occurs in the brain and spinal cord seems to speak against a simple hypersensitivity. Rather, it appears as direct evidence in favor of the idea of specificity of the drugs for peripheral nervous tissue, which can be correlated with the clinical and pathologic changes. The explanation of the difference in the degree of injury done by the drugs appears most logically to lie in their different chemical structures. It does appear, however, that these toxic manifestations are chronic. For this reason, when any of the drugs of the sulfanilamide series are used, physicians should observe their patients most carefully and institute every precaution to prevent any unnecessary rise in the concentration of the drug in the blood stream and any unnecessarily prolonged use of the drug. In no instance should any of these drugs be used promiscuously or without careful supervision.

ADDITIONAL CASE OF PERIPHERAL NEURITIS

After our manuscript had been submitted for publication another case of possible early peripheral neuritis in man due to sulfathiazole was brought to our attention by Dr. W. W. Spink of the Division of General Medicine, University of Minnesota General Hospitals. He has consented to the following report:

A. K., a white man aged 63, entered the University Hospital for transurethral prostatectomy, which was carried out on Dec. 8 and 20, 1939. A cholecystectomy was performed on Jan. 12, 1940. The patient had a persistent infection of the bladder caused by Bacillus proteus. During the period from Jan. 14 to Jan. 18, 1940 he was given 18 Gm. of sulfapyridine. Nausea and vomiting occurred. On February 1 the patient was given sulfathiazole and during five and one-half days received 27 Gm. The therapy was then discontinued because of the onset of nausea and vomiting, oliguria and tingling and numbness of the fingers of both hands. No other neurologic symptoms were observed. The paresthesia of the fingers was interpreted as

13. Chinn, H., and Bellows, J.: The Distribution of Sulfanilyl-2-Aminopyridine in the Body, J. Lab. & Clin. Med. **25**: 735-738 (April) 1940. Marshall and Litchfield.[12]
14. Long and Bliss.[5] Bannick, Brown and Foster.[7]

beginning peripheral neuritis. At the end of this five and one-half day period of dosage the level of the drug in the blood had risen from 3.2 mg. of free and 5 mg. of total to 13.7 mg. of free and 22.2 mg. of total sulfathiazole per hundred cubic centimeters. In spite of an adequate intake of fluid the urinary output dropped from 1,200 cc. to 100 cc. a day during this period. A week after discontinuance of therapy the gastrointestinal and nervous symptoms had disappeared, the level of the drug in the blood had dropped to 5.6 mg. of free and 10.3 mg. of total sulfathiazole per hundred cubic centimeters, and the output of urine had risen to 1,300 cc. daily. At this time the patient's blood urea nitrogen was elevated from 16.3 mg. to 34 and 53.5 mg. per hundred cubic centimeters. A week later this had dropped to 19.5 mg. per hundred cubic centimeters. The renal function was normal at this time, and the urine was sterile.

SUMMARY

1. The order of the drugs in the sulfanilamide series studied according to the amount of injury they produce in the nervous system of the chicken, beginning with the least injurious, is sulfanilamide, sulfapyridine, sulfathiazole, sulfamethylthiazole, sulfanilyl dimethyl-sulfanilamide and sulfaphenylthiazole.

2. Under certain conditions unknown at present, and after repeated doses, some cumulation of at least four of these drugs tends to occur in the sciatic nerve.

3. The case of peripheral neuritis in man reported here possibly was due to sulfathiazole.

THE INTERRELATION OF NEUROLOGY, PSYCHIATRY AND PSYCHOANALYSIS

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The relationship of clinical neurology, psychiatry and psychoanalysis as specialties of medical practice is not clearly understood by the lay public or by the medical profession. These fields are thought of sometimes as sharply isolated, are often confused with one another, or are considered together as one special branch of medicine. I consider that they are intimately interrelated, and my thesis is that the future progress of all three in practice and research is dependent on a diffusion through the artificial boundaries of the fundamental principles, methodologies and recognized facts of each. The integrated neuropsychiatry that results will be a legitimate member of the medical sciences broad enough to include normal and abnormal psychology hitherto largely ignored by medicine.

By accepted definition, clinical neurology is that branch of medicine concerned with the investigation, methods of examination, diagnosis and treatment of organic diseases of the nervous system. Its technics, although specialized, are similar to those of internal medicine. Psychiatry deals with the investigation, description, diagnosis and therapy of disturbances of mental processes concerned with intelligence and emotion, no matter what their origin, and its technics are largely psychologic in a descriptive sense, for study is made of verbalisms and behaviorisms. Medical psychoanalysis investigates, diagnoses and treats unconscious dynamic factors which influence emotional expression, behavior and thought processes. Its technic is a highly specialized type of psychology—analysis of behavior, free associations and dreams—adapted to the goal of understanding the unconscious. The overlap and possible integration of these three fields in clinical practice at once become apparent. Many organic diseases of the nervous system such as dementia paralytica and cerebral neoplasms manifest themselves partially or entirely by mental abnormalities or disorders of behavior. The specific psychiatric syndrome that a patient presents is not explicable by understanding the organic changes alone but in addition by determining the individual unconscious factors in that patient. Furthermore, psychiatric syndromes known as functional neuroses and psychoses, for example the compulsive neuroses, can be understood or treated only by exposing the underlying unconscious emotional basis.

To some it seems hardly necessary to point to such overlap or to discuss interrelations and integration, yet antagonism of the strongest type was still fiercely expressed in 1939 in the utterances of specialists within all three fields. A psychiatrist recently published the results of a questionnaire in which one item asked whether psychoanalysis was completely accepted, as if one could accept a scientific discipline as a divine law. A neurologist pleaded for neuropsychiatrists who have adhered to orthodox doctrines to hold their forces well in hand for an impending battle to keep neuropsychiatry on a sound organic basis. This sounds as if the author anticipated a revolution to which he reacted with fear rather than scientific objectivity. A psychoanalyst stated that pharmacologic shock represented the expression of an ancient trend of conscious and mostly unconscious hostility against the mentally ill. To him drastic methods to alter the cerebral chemistry or cerebral blood flow made the physician employing them sadistic.

I believe that physicians have developed to a degree at which such antagonisms should have become historical and integration of the disciplines of neurology, psychiatry and psychoanalysis feasible, because a rational understanding of the problems of the human mind are possible only by using the scientific and empiric knowledge of all. I hope to demonstrate that the basic principles and clinical methods of interpretation of dynamic neurology and psychiatry are identical—that both neurologic and psychologic phenomena are explicable by the same fundamental biologic laws.

Clinical neurology is most closely allied to internal medicine although, as I shall point out later, there are important basic differences. Its groundwork traditionally is morphology—comparative anatomy, embryology and gross and microscopic anatomy. The structure and interconnections of various parts of the peripheral and central nervous system have been carefully studied and most of the larger fiber tracts described. By no means is the entire, complex anatomy known, since a large portion of the finer systems of unmyelinated fibers are yet to be traced. The first conjectures as to function of separate parts of the nervous system were made from morphologic investigations. Later physiologic studies on experimental animals and at the bedside opened much greater areas of knowledge regarding the nervous system, and recent technical advances such as the oscillograph and the electroencephalograph have facilitated determinations of finer details of function. However, studies of physiology and pathophysiology of the human nervous system have lagged far behind work on experimental animals, which cannot be transposed to man because his higher centers have taken over many functions residing in the lower centers of other mammals (encephalization).

The study of neuropathology received its greatest stimulus from the cellular pathology of Virchow and

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From the Department of Neuropsychiatry of the Michael Reese Hospital.

the development of special staining technics. Although neuropathology was a great catalyst for the development of clinical neurology, it at the same time hindered the progress of physiology of the nervous system and placed an almost ineradicable bias on generations of neurologists. In the first place anatomic aspects were used as physiologic evidence. Given a clinical syndrome of neurologic defect and at necropsy a damaged structure, then in that structure the function which had been clinically disturbed was supposed to reside. Innumerable mistakes were based on such reasoning because the complexity of functional interrelations within the nervous system was neglected and only morphologic alterations visible under the microscope were relied on. In the second place, the neurohistologists Nissl and Alzheimer, after developing special staining methods to disclose detailed alterations within the nerve cells, believed that specific changes in ganglion cells could be correlated with specific diseases. This has not been confirmed for a single morbid entity. The new neuropathology, which had great scientific appeal because of the use of high power microscope lenses and thus gave an appearance of objectivity, attempted to explain psychiatric as well as neurologic disorders on a purely morphologic basis. The concepts arising therefrom slowly disintegrated and even now tend to flourish for a time among various groups, although the expectation for an organic basis of all nervous disorders has become displaced from microscopically detectable changes to the finer physical chemistry of the cell structure.

Psychiatry has for long been the weak sister of medicine largely because of man's defensive emotional attitude toward his own emotions. It was only one hundred and forty-eight years ago that Pinel's influence lessened the severe hostility displayed against the mentally ill. Only recently have psychiatrists been permitted the privilege of using hospital facilities wherein the full cooperation of the laboratory and clinical sciences could be obtained. Until the last century only a few psychiatric syndromes had been delineated from the chaotic and confusing clinical manifestations of the so-called lunatics. In 1883 Kraepelin inaugurated the first clinical classification in psychiatry based on descriptive life histories; a modified and amplified version of this is still used in the psychiatrist's diagnostic terminology. Under the influence of the then new discoveries in cellular pathology, Kraepelin attempted to link the nosologic entities with specific cellular changes in the brain. Thus the first step of psychiatry toward a scientific etiology was in the direction of pathologic anatomy.

In this country a more holistic concept of etiology was advocated in the early decades of this century by Adolf Meyer, who insisted that all the psychologic effects of environment, conflicts and frustrations were equal in importance to endogenous constitutional factors and pathologic changes in the causation of mental disorders. But even today psychiatry is largely descriptive except when it borrows from biochemistry research technics of precision which have given false promise in solving the problem of etiology in mental illness. The field has become static just as far as psychiatrists have been content to utilize the descriptive methods of academic psychology and kraepelinian psychiatry for their clinical investigations and overlook the dynamisms of human emotions.

Psychoanalysis is the youngest of the three fields under discussion, for Freud's first contributions were published only a little more than forty years ago. His original works evoked a bitter and emotional controversy, the sense of which has long since been lost, for today medicine has become mature enough to grasp the significance of unconscious emotional factors, and psychoanalysists have begun to understand their own relationship to medicine. The early rejection was strongly tinged with hatred, due probably to the difficulty of even psychiatrists facing their own unconscious drives. The result was a forced isolation of the freudians, who were compelled to form their own groups and societies apart from the universities and other medical contacts, and although these circles have continually widened they have always remained small and relatively inbred. However, of equal importance in this separation from biology was Freud's own dictum that psychoanalysts should concern themselves only with psychologic matters, the biologic origin of which should be left to investigators in other fields. This unfortunate isolation has been rapidly overcome in this country by psychoanalysts less orthodox than the original European groups and by the gradual penetration of psychoanalytic dynamic concepts into static descriptive psychiatry.

Many of the original freudian concepts will be discarded and much will be modified. However, the basic concepts of unconscious mental forces, conflicts and repression will probably persist as fundamental principles in psychology. The theory of instinctual forces in psychology may be abandoned and infantile sexuality reinterpreted as phenomena of gradients of growth, but the general idea that emotional forces within the realm of the unconscious are responsible for the direction of activities in the field of thought and behavior continues to receive confirmation. These drives or forces of biologic origin push man into activities which meet with prohibitions from his social and cultural environment; the result of this is a conflict the solution of which necessitates modification, sublimation or repression. This epitomizes the battle of each individual's lifetime.

As one proceeds from neurology through psychiatry to psychoanalysis one can discern a gradation of increasing deviation from the basic facts of anatomy and physiology susceptible of experimental proof. From a science resting directly on the foundations of biology to the descriptive field of psychiatry concerned with classification, one arrives at more abstract, nevertheless scientific, concepts concerned with dynamic factors involving intangible forces of energy. These are expressed in symbolic language and acts, highly individualized for each person but susceptible of abstraction into common laws. Yet each field deals with identical problems—the functions of the human nervous system. Brain and mind can be understood only by observing the identity of the natural laws which regulate both, the former in terms of space and time, the latter as subjective reflections of the same physiologic processes. Their scientific vocabularies may vary, but to me at least it is obvious that the laws of psychology must be identical with those of physiology, for mind is no epiphenomenon but a concomitant of the function of definite anatomic structures.

In comparing neurology with psychoanalytic psychiatry I do not consider the static pathophysiology of the last century as representative of neurology but speak of the dynamic neurology vigorously developing in this country today on the foundations laid by John Hughlings Jackson. He was the great stimulant of the English school who thought out crucial animal experiments for his younger colleagues to perform in the laboratory but himself remained at the bedside. Jackson conceived of

the nervous system as a gradually developing hierarchy which he roughly divided into three levels corresponding to their evolutionary significance. He stated that the highest nervous centers, the climax of this evolution, are in popular language "the organ of the mind" and insisted that this "organ" functions as much on the basis of reflex activity as the lumbar enlargement of the spinal cord. He believed that the constitution of the highest centers differs vastly in degree from that of the lowest center, for they represent most indirectly all parts of the body in most numerous and more complex combinations.

The highest level of the organ of the mind Jackson located in what is now termed the frontal associative area, but this does not mean a localization of mental processes or consciousness within a specified anatomic area. Since the highest centers represent the whole organism, they are widely detached and protected from the sensory periphery and the muscular system. The highest centers are thus permitted to act without interruption or disturbance and need not participate in lowermost automatic functions. Through such isolation slower, more adaptive symbolic formulation and delay in expression are achieved by the highest levels.

Nervous integration at the lowest levels is represented by varying combinations of reflexes, on the synapses of which many influences exert modifying effects. Recent evidence points to chemical substances, accumulated at the synapses, which are responsible for inhibition and augmentation of reflex activity. This type of inhibition may be termed biologic and, fulfilling certain patterns to a great extent phylogenetic but not clearly understood, is at the basis of shifts of activity within the central nervous system. It is possible that the physicochemical forces playing on the lowest cellular levels may be compared to and perhaps in the future identified with the forces and drives which Freud postulates as so important in the psychic activity at higher levels and which he too stated conform to reflex activity.

Within the lower levels there proceeds much activity which never reaches consciousness directly or at all. By means of inhibition, incoming stimuli may be prevented from evoking a simple intrasegmental response and diverted by a process of "long-circuiting" to higher levels within the neuraxis so that the simplest, most immediate responses are delayed or modified. There is good evidence to suggest that some long-circuiting is always present, and on its quantity depend the degree of delay and the quantity of extinction of the reflex and the amount of involvement of the higher level resulting in consciousness of the stimulus and awareness of its significance.

As the nervous system became more complicated in the process of evolution, newer cephalic structures developed, toward which representations of lower functions wandered in the process called "encephalization." The development of newer and more adaptable functions was accompanied by alterations in activities of lower structures. Such modifications were in the nature of inhibitions from above. Thus evolution not only brought in new positive factors but held or damped down older functions, often extinguishing them completely. To give an example in the motor sphere: The infant shows little voluntary control but purposeless, random movements, lively deep reflexes and phylogenetically old defense reflexes, including the Babinski response, all evidence of uninhibited activity of the lower level. Maturation of the cortex puts the motor system under voluntary control, abolishes the choreoathetoid, old movements of the motor system, reduces amplitude of the reflex and converts defense flexion reflexes into extensor stepping responses. The latter evolved level adds fine voluntary individual movements and at the same time inhibits older types of activity. These activities of the lower level reappear only when control by the cortical higher level is disturbed in disease—in the foregoing example, when lesions of the premotor cortex result in the loss of fine voluntary motor control and the reappearance of choreoathetoid movements. Symptoms then manifest themselves within two spheres: The negative factor is the loss of function which resided in the damaged structure; the positive factor is the release of function normally inhibited by the damaged structure. The former is often of lesser importance because of compensations and vicarious functions by other structures; the latter usually dominates the clinical picture. It is this combination of negative, positive and compensatory factors that places the reasoning and rationalizations of neurology on a basis different from that of internal medicine.

Using the epilepsies as examples, Jackson showed that dissolution of the nervous system need not be due to an anatomic lesion. After an attack, the postepileptic phenomena demonstrate both the negative and the positive aspects of dissolution. In the functional fatigue of higher centers following exhausting excitation, all the phenomena of release can be observed temporarily.

Evolution of the nervous system recapitulated by the individual in his process of maturation is accompanied by a corresponding process in behavior and the emotional life. According to the degree of long-circuiting possible and the quantity of encephalization of function, animal species show a degree of inhibition of stereotyped immediate reflex behavior and a more delayed adaptive response to external excitation. The developing infant shows in his behavior evidences of activity of the lower level in stereotyped responses to many stimuli, quantitatively excessive responses and inability to delay activity. He passes through many stages of behavior which can be graded quantitatively according to the aforementioned criteria and in relation to his needs at various chronologic periods of growth. His life in a civilized world, however, demands that he give up long before he is ready the gratifications of behavior prompted by the lower level. As his cerebral cortex develops, his ego may bear deprivation and delay in activity. Excessive responses and immediate behavior are supplanted by delayed adaptive verbal expressions or rational acts. Thus psychologically the older, more directly gratifying activity is inhibited or repressed and the activities of the higher level of the ego become dominant.

The prohibitions of external realities force an inhibition or repression of the direct expression of the drives or forces typical of all animal life. In psychologic repression one meets with a quantitative factor which makes the end result different from neurologic inhibition. The animal or instinctual forces are of tremendous strength and are kept from direct expression with difficulty. Civilization, no matter how it arose, has not yet evolved in man an ego sufficient to repress successfully the old activities, as the present worldwide outbreak of beastlike hostility amply demonstrates. Cultural environment demands repression, instincts demand direct expression and man finds himself not yet biologically adapted to the former, so that a continuous struggle between his levels of neural organization involves him in psychologic dilemmas for

which he attempts many, often disastrously unsuccessful, solutions termed neurotic or psychotic.

One may consider the phenomenon of this great conflict similar in nature to the intense neural excitation which precedes the motor aspect of an epileptic fit. When the extraordinary excitation has passed, consciousness is lost and the discharge passes into lower motor levels. Excessive excitation without adequate discharge results in fatigue and paralysis. In periods of conflict excessive psychologic excitation results which cannot be discharged by the ego. The pressure of emotional drives meets resistance from without, and functions of the ego become fatigued or paralyzed. There result two aspects, as in any neurologic lesion. The negative is evidenced by the fact that the instinctual drives are not expressed through the highest level in highest symbolic expression—words or gestures. The positive aspect finds its expression through lower levels now permitted to act by the release from the higher, inhibiting functions. As in the somatic sphere the positive aspects dominate the picture in the new phenomenon of symptom formation or "return of the repressed." The negative aspect or deficiency is likewise compensated for by other functions, although not influencing the quantity of release. The ego's deficiency and compensations for it are spoken of as "reaction formation."

The psychoanalytic theory of symptom formation depends on the concept that the repressed or undischarged energy escapes elsewhere than through the motor activity of the ego—that it returns modified as a symptom. In neurologic terms Jackson stated that diminished action in one part of the nervous system results in exalted action in another part, but this so-called new action takes place on a lower level. Neurologically, release of lower levels results in a greater preponderance of visceral participation in reflex activity. Psychologically, verbal expressions and direct motor activity of the somatic nervous system are replaced by autoplastic innervations, what may be roughly stated as "turning one's emotions against oneself," producing disturbances of function of the internal visceral organs innervated by the autonomic nervous system. It seems clear that regression to lower levels of psychologic activity has a particular applicability to the mechanisms of organ neuroses.

Effect of therapy indicates that these functional changes are at least in the early stages reversible. The symptoms can be caused to disappear and regression at least partially removed by reestablishing the functions of expression of the higher levels which are not destroyed but are in a state of functional paralysis. Regression is at an end when the function of the ego in symbolic expression is reestablished, in other words when exteriorization of instinctual drives may take place through the highest level, which when functioning resumes its inhibiting influences on lower levels anew.

In devolution of the nervous system in disease processes, repression has been seen to be synonymous in its effects with release of inhibition, resulting in regression to lower levels of activity. In the various degrees of long-circuiting from lower to higher levels within fairly fixed neural pathways, repression of simple reflex activities has been termed inhibition. Moreover, like repression at higher levels, the results are a negative factor in that activity fails to be a simple response over a securely fixed pathway, and a positive factor in that activity at higher levels is permitted. One can then state that both repression and inhibition indicate a negative factor, in that a certain level of activity is abandoned, and a positive factor which results from or is permitted by the shift of activity from one portion of the nervous system to another. It is on this basic principle that both clinical neurology and psychoanalysis are able to explain the phenomena of so-called disease entities expressed in the form of either physical or psychologic symptoms.

Two other neurophysiologic phenomena become apparent when the psychoanalytic concepts of conflicts and their therapy are considered. Psychologic conflict originates when the immature nervous system and corresponding weak ego are forced by external agencies into exerting repressing influences on the child's normal instinctual activity. These agents are external and by repetition of their demands cause the phenomenon of repression to become permanent. This is identical with conditioning, for the child unconsciously and automatically perpetuates these early patterns of behavior. Psychoanalysis terms this conditioning or internalization of one time external voices of authority as the creation of a superego. In therapy, possible in adult life when functions of the ego are stronger, removal of conditioned responses or deconditioning the superego by permitting gradual testing of a less prohibitory and strict reality, excitation can again be discharged through the highest levels and neurotic symptoms or activities prompted by the lower level abandoned. This is one of the fundamental principles of psychoanalytic therapy.

Facilitation is a process of gradual lowering of the threshold of excitation by repetitive stimuli. Electrically stimulating the motor cortex may at first produce only a local response, but if it is continued a generalized convulsion ensues. Such facilitation is evidenced psychologically by gradual mounting tensions breaking through to the expression of a violent emotion. The subthreshold stimuli may be entirely unconscious and the final discharge as surprising to the subject as to those around him. Such subthreshold stimuli are reproduced in therapy by psychologic interpretations which gradually build up tensions within local areas of the cortex, finally swelling up to a discharge in behavior or words which permit to enter consciousness activities which were neurotically active at visceral levels. After breaking into consciousness the deconditioning efforts of the therapist permitting and accepting such impulses allow them to be understood and more adequately dealt with.

These dynamic expressions of interplay and shift of activities within levels of the nervous system indicate the identity of the fundamental neurologic and psychoanalytic principles. I have spoken theoretically of interplay among such levels without indicating their concrete existence and without commitment as to localization of emotional and intellectual functions. It is valuable to turn to the hypothalamus and cerebral cortex in considering those functions. Hypothalamic functions are concerned with emotional expression, regulation of endocrine and visceral activity and degree of consciousness. A tremendous amount of work has been done on this structure but little interpretation of the results in furthering our concepts of a dynamic interplay between emotions and intelligence.

The hypothalamus is a small structure lying at the base of the brain under the thalamus between the optic chiasm and the cerebral peduncles. It contains the tuber cinereum, mamillary bodies and infundibulum and forms the base of the third ventricle. Within it are several nuclear masses easily distinguishable and many

other cells not easily demarcated into nuclei. The hypothalamus is closely allied with the old olfactory system through the fornix and mamillothalamic tracts, with the midbrain by descending fibers, with the hypophysis, with the thalamus and indirectly with the neocortex.

The hypothalamus is an effector structure receiving its afferent supply from the thalamus. It regulates and integrates autonomic activity and is thus concerned with sleep, regulation of bodily temperature, metabolism of minerals, carbohydrates, fats and proteins, water metabolism and reproduction. Thus it regulates and integrates conservating autonomic functions. However, at this time I wish only to discuss its position in relation to cortical activity.

It has been shown repeatedly that removal of the structures anterior to the hypothalamus—removal of cortical influences—results in wild, uninhibited activity which has been termed sham rage. Such emotional activity can be reproduced by direct stimulation of the posterior hypothalamus, making it clear that this violent emotional expression is inhibited by the cerebral cortex and that the center for the integration of visceral and somatic components for emotional expression lies in the hypothalamus. Damage to this area causes apathy and a sort of catalepsy with somnolence.

Numerous clinical observations in man indicate that tumors and infections damaging corticohypothalamic connections release hypothalamic activity and cause signs of aggressive destructive ragelike behavior. In development one observes impulsive, uncontrolled emotional expressions in infancy and childhood before the cortex has sufficiently matured to function as an inhibitor of hypothalamic activity. The hypothalamus as a central integrator of the autonomic nervous system has become the cephalic representative of its visceral activities subjectively expressed in emotional drives and forces and is only temporarily permitted free expression.

In psychologic language, the child is driven by his instincts, which are held in check only by a process of cortical learning induced by environmental admonitions and prohibitions. Such learning is possible only when the cortex is matured and to a degree dependent on its functional capacity, which is to a large extent innate. This function of adaptation is attributed to the psychologic ego, which is the subjective correlate of activity of the cerebral cortex. Functions of the ego are of many grades of efficiency, from the weak, easily overwhelmed by hypothalamic activity, to the overly strong, which hold down most of the biologic emotional drives and result in a rigid, perfectionistic, supermoral character. This degree of activity is dependent not alone on the quality of the cortical structure but also on the type of conditioning to which it has been exposed from the psychologic influences of the early environment.

The cortex thus inhibits the hypothalamus and releases it in phasic responses for activity in emotional expression initiated by specific internal and external stimuli. Let us examine the influence of the hypothalamus on the cortex itself in order to determine the forces which require modification and expression:

Stimulation of the hypothalamus in the cat and in man causes an excitation of the potentials of cortical action in varying degrees, depending on the strength of the stimulus. Intense stimulation results in the cortical waves becoming faster, gigantic and in synchrony or phase with those of the hypothalamus. Drugs, such as epinephrine or metrazol, having a sympathetic stimulating effect likewise augment cortical activity. Drugs having a depressing effect on the hypothalamus, like pentobarbital sodium or pilocarpine, have a depressing effect on the cortex. Thus the hypothalamus is like a driver or excitor of the cortex, which is in conformity with the recent experimental work indicating that sleep is an inhibition of the hypothalamic centers for wakefulness.

Psychologically these experiments assume importance, for a patient given an emotionally significant verbal stimulus reacts as if his hypothalamus were electrically stimulated. Furthermore, in both electrical and verbal stimulation bursts of activity reappear from time to time similar to disagreeable ideas convulsively popping up in one's mind despite attempts at forgetting. One may state that in experimental hypothalamic studies there has been shown a neurologic basis for the overwhelming of intellectual processes by emotional activity and that the hypothalamus is a reservoir for prolonged excitation and a chronic effect on the cortex and periphery.

Psychoanalysis has shown that attempts at repression, that is, inhibition of more emotional instinctive behavior, are by necessity characteristic of all mankind. Failure or success is a relative matter, and neurosis is universal, varying in degree, dependent on how repressed or unconscious energies can be dealt with. Experiments demonstrate conclusively that hypothalamic activity in variable degree activates cortical functions and that there is an inhibition of the hypothalamus by the cortex and a driving of the cortex by the hypothalamus. Thus a relationship exists in a dynamic physiologic interplay between these structures identical with the dynamic interplay between ego and unconscious emotional drives, the quantitative and qualitative result of which is evidenced in the severity and type of neurosis.

Where dynamic clinical neurology and psychiatry have reached their closest point of fusion in the present is in psychosomatic medicine. This field has for its object the study of the interrelation of the psychologic and physiologic aspects of normal and abnormal bodily functions with a rational therapy as its ultimate goal. It approaches the problems of etiology and therapy in general medicine from a psychologic point of view. It takes for granted that psychic and somatic phenomena are part of the same biologic system. There can hardly be any doubt that the specific apparatus concerned in the unity of effect portrayed in psychologic and somatic disturbances is the nervous system. One may study the process by the technics of psychology or physiologic methods of internal medicine or neurology, but one is always expressing one side of the problem—both are necessary for an adequate and complete understanding.

The psychoanalytic view of organic neuroses is that emotional tensions require adequate cortical activity of the highest level for their relief; if repressed, they find expression in somatic symptoms which are simply substitute attempts of the lower level at relief of emotional tensions. These symptoms disappear if the repressed emotion is made conscious. When the emotional tensions are not relieved they become chronic and result in bodily changes. These repressed tensions and ultimate bodily changes take place within the sphere of the vegetative nervous system for the reason previously outlined.

In the early days of psychoanalysis interest was largely centered on those aspects of bodily symptoms affecting the voluntary nervous system which are classified as hysteria. Gradually interest veered to those symptoms and signs of disorder of the visceral organs

innervated by the autonomic nervous system. The patient with attacks of anxiety accompanied by tachycardia, hypertension, perspiration, diarrhea, polyuria or dysmenorrhea was readily acknowledged to be suffering from a neurosis. It was only vaguely indicated that emotional factors played some role in the syndromes of diabetes mellitus, peptic ulcer, colitis, migraine, hypertension or bronchial asthma. Emotional factors were believed to act by exaggerating these conditions, or the organic illness reversibly increased the patient's nervous instability. It is only lately that the possibility has been advanced that these syndromes which arise as evidences of disturbed function of visceral organs may be caused by emotional conflicts. It is on this future phase of medicine—psychosomatic medicine—that psychoanalysts such as Alexander and his co-workers are now busy.

The fundamental thesis is this: Intrapsychic conflicts may result, after repression, in activities of the lower level which engaged the activity of the autonomic nervous system. The results are contractions of smooth muscles the chronicity of which leads secondarily to organic changes in the visceral organs. These organic changes are thus terminal events in a causal change whose beginning is a psychologic conflict which forces neural activity to adopt a regressive pathway rather than a direct or verbal higher level expression.

The selective nature of the functional change and secondary organic effect is a problem which requires careful correlation with specific emotional conflict. Such correlations are in the process of study, although some have already been elucidated.

Sufferers from peptic ulcers react from a conflict between their unsolved, passive, dependent attitudes and their self-respecting aggressiveness and independence. The former is not permitted expression of the higher level in verbal longings or behavior, thus necessitating continuous innervation of the upper portion of the gastrointestinal tract, the organ of passive intaking. Long-continued chronic stimulation of the smooth muscle of the stomach and its glands leads to an organic breakdown and the formation of an ulcer.

In certain persons conditioning has resulted in an inhibition of the direct verbal or active expression of rage through the innervation of the voluntary nervous system. The whole emotional process plays itself out within the autonomic nervous system, as evidenced by hypertension. At first this fluctuates as the emotional stimuli impinge on the individual, but the long-continued effect may result in organic changes in structures which perpetuate the hypertension and set up a chain of events which ends in malignant alteration in a whole group of organs. The morphologic alterations evidenced at necropsy are the last events in a whole series of consequences of emotional conflicts incapable of direct expression.

Medicine has valiantly sought to make the greatest use of cellular pathology in an explanation of disease, but it has never been satisfied that the entire story of the so-called degenerative diseases was known. Constitutional and hereditary factors have been too evasive to be permanent concepts. What are dismissed as constitutional are individual factors more dynamically expressed as the result of the interaction of a specific organism with problems and frustrations of life that set into activity, through failure of adaptations of the whole organism, a series of events that ends in disease. Such failures, which are attributed to constitution, allergy and lowered resistance, are but expressions of a dynamic interplay between the total organism and the environment. Such a concept is not mystic or vague but utilizes the soundest of biologic concepts. It brings disease into relationship with a system of energies valid and dynamic and gives one optimism that the hopeless category of constitution may be replaced by a factor amenable to therapy. Medicine may return its attention to treatment of the spirit of the total organism without fear of losing its scientific attitude and without fear of becoming mystic and returning to demonologic concepts. The study of the patient as a whole—the personality as the expression of the unity of the organism—becomes the right and duty of the medical man.

I could not possibly present the entire interrelation of neurology, psychiatry and psychoanalysis in one brief communication. Therefore I chose to indicate the identity of their basic principles, exemplified by a discussion of the physiology of hypothalamic-cortical or emotional-intellectual dynamic interplay. Finally, I have indicated that the basic neurologic-psychologic concepts have now pervaded medicine in an attempt at furthering the study of the etiology and therapy of many obscure internal diseases. Thus neuropsychiatry expands beyond its limited interest in purely neurologic diseases or purely psychologic disorders and contributes in a practical manner to the field of medical therapeutics.

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USE OF DIGITALIS TO PREVENT EXAGGERATED ACCELERATION OF THE HEART

DURING PHYSICAL EXERCISE IN PATIENTS WITH AURICULAR FIBRILLATION

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The ventricular rate serves as the chief guide to the degree of digitalization of patients with auricular fibrillation. The customary procedure is to give enough digitalis to reduce the rate of the ventricles to about 70 beats a minute and to maintain it at that level. It is well known, however, that if this result is attained with the patient at complete physical rest the rate in some cases mounts considerably when the patient is up and about. Furthermore, it may show wide fluctuations with moderate effort. Sir Thomas Lewis [1] stated: "Although it is usually possible to control the rate in cases of auricular fibrillation, when the patients are at rest or quietly exercising, it is rarely possible to control the rates adequately in conditions of freer exercise." In a recent report by Weinstein, Plaut and Katz [2] a contrary observation was made. In a previous study [3] it was found that the same resting level of the heart rate can be attained in auricular fibrillation by either of two mechanisms of the action of digitalis, one of these

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1. Lewis, Thomas: Diseases of the Heart, New York, Macmillan Company, 1934, p. 90.

2. Weinstein, W.; Plaut, J., and Katz, L. N.: Limitations of the Use of Digitalis for Ambulatory Patients with Auricular Fibrillation, Am. J. M. Sc. **199:** 498 (April) 1940.

3. Gold, Harry; Kwit, N. T.; Otto, Harold, and Fox, Theodore: On Vagal and Extravagal Factors in Cardiac Slowing by Digitalis in Patients with Auricular Fibrillation, J. Clin. Investigation **18:** 429, 1939.

requiring larger doses than the other. When the rate is reduced to about 70 a minute by moderate doses of digitalis atropine abolishes the slowing (chiefly "vagal" action), but when larger doses are used by the same person atropine causes relatively slight acceleration (chiefly "extravagal" action).

It seemed possible that these observations might have a bearing on the practical problem of preventing the extreme fluctuations in heart rate due to physical exercise in patients with auricular fibrillation under the influence of digitalis. They suggested that extravagal digitalization might accomplish this. A related problem was how one might best determine clinically whether the ventricular rate is under "vagal" or extravagal" control after the administration of digitalis. This could be done by means of the atropine test, but it is not always practicable because the necessary dose is 2 mg. of the sulfate by intravenous injection,[3] and that dose often causes distressing symptoms.

The question, then, was whether the ventricular acceleration during physical effort is due to decreased vagal tone or to other factors. If the acceleration after exercise in digitalized patients with auricular fibrillation is due only to decreased vagal tone, one would expect that the exaggerated acceleration would not occur in patients digitalized by the "extravagal" mechanism, for in these cases vagal tone plays little part in the slowed rate. If, on the other hand, the acceleration in these patients is due solely or chiefly to some other factor, one would expect it to take place irrespectively of whether the slowing is produced by the "vagal" or the "extravagal" mechanism.

The present study is an endeavor to secure an answer to the foregoing questions. We compared the cardiac acceleration caused by vagal paralysis with that caused by physical exercise to the point of extreme fatigue in patients with auricular fibrillation before administering digitalis, during "vagal" and during "extravagal" stages of the action of digitalis.

METHOD

In all, twenty-seven experiments with atropine and a similar number with physical exercise were carried out on 11 ambulatory patients with auricular fibrillation showing varying degrees of heart failure. These included 3 patients with arteriosclerotic heart disease, 7 with rheumatic heart disease and 1 with syphilitic heart disease. There were 6 men and 5 women, and their ages ranged from 19 to 77. All had been under our treatment at the cardiac clinics for years. Each patient rested lying down until the ventricular rate reached a constant level, which was taken as the control rate. This was followed by the physical exercise, which consisted in walking rapidly up several flights of stairs until the patient complained of extreme fatigue and felt unable to go further. At this point a count of the ventricular rate was made. This was followed by a period of rest of thirty minutes. Then a dose of 2 mg. of atropine sulfate was injected intravenously. This dose is sufficient to block the vagal endings com-

TABLE 1.—*Condensed Protocols of Cases in This Study*

Patient	Sex	Age	Diagnosis *	Daily Dose of Digitalis Preparation	Resting Ventricular Rate	After Atropine: Maximum Ventricular Rate	After Atropine: Acceleration, Beats per Minute	After Exercise: Maximum Ventricular Rate	After Exercise: Acceleration, Beats per Minute
A. A.	♂	76	Arteriosclerosis, enlarged heart, sclerosis of aorta, 3D	None	100	170	70	170	10
				Digitalis leaf, 4 cat units	90	170	80	190	100
				Digitalis leaf, 6 cat units	50	130	80	110	60
J. W.	♂	66	Arteriosclerosis, enlarged heart, coronary sclerosis, 3D	None	130	170	40	140	10
				Digitalis leaf, 2 cat units	80	120	40	90	10
				Digitalis leaf, 4 cat units	60	90	30	65	5
W. S.	♂	63	Syphilis, enlarged heart, 2C	None	115	175	60	180	65
				Digitalis leaf, 4 cat units	100	140	40	130	30
				Digitalis leaf, 4 cat units	90	100	10	110	20
				Lanatoside C, 0.75 mg.	80	170	90	180	100
E. P.	♀	32	Rheumatic fever, enlarged heart, mitral stenosis, mitral insufficiency, 3D	Digitalis leaf, 2 cat units	110	170	60	150	40
				Digitalis leaf, 4 cat units	60	120	60	130	70
C. F.	♀	52	Rheumatic fever, enlarged heart, mitral stenosis, mitral insufficiency, 3D	None	60	110	50	130	70
				Digitalis leaf, 2 cat units	50	90	40	100	50
				Lanatoside C, 0.75 mg.	74	121	47	126	52
J. C.	♂	77	Arteriosclerosis, enlarged heart, sclerosis of aorta, 2C	None	110	170	60	160	50
				Digitalis leaf, 4 cat units	90	115	25	110	20
M. G.	♀	19	Rheumatic fever, enlarged heart, mitral stenosis, mitral insufficiency, aortic insufficiency, 2C	None	100	180	80	150	50
				Digitalis leaf, 3 cat units	60	140	80	145	85
D. C.	♂	54	Rheumatic fever, enlarged heart, mitral stenosis, mitral insufficiency, 3D	None	50	90	40	110	60
				Digitalis leaf, 3 cat units	70	110	40	110	40
				Digitalis leaf, 6 cat units	50	100	50	80	30
				Digitaline Nativelle, 0.2 mg.	51	88	37	114	63
F. M.	♂	44	Rheumatic fever, enlarged heart, mitral stenosis, mitral insufficiency, 2C	Digitaline Nativelle, 0.2 mg.	62	129	67	118	56
				Digitaline Nativelle, 0.2 mg.	55	122	67	109	54
R. K.	♀	38	Rheumatic fever, enlarged heart, mitral stenosis, mitral insufficiency, 3D	Digitaline Nativelle, 0.4 mg.	56	112	56	115	59
T. S.	♀	57	Rheumatic fever, enlarged heart, mitral stenosis, mitral insufficiency, 3D	Digitaline Nativelle, 0.2 mg.	66	103	37	138	72
				Averages	77	130	53	128	51

* The diagnoses are made in accordance with the "Nomenclature and Criteria for Diagnosis of Diseases of the Heart" (New York Heart Association, 1939).

pletely.[3] The ventricular rate was counted immediately after the injection and continuously during the next five minutes. The maximum rate was taken as the full effect of the atropine. The ventricular rates were counted by means of the stethoscope at the apex in some cases and in twenty of twenty-seven experiments they were counted from strips of electrocardiogram.

The foregoing procedures were carried out after digitalization in all cases and also before digitalization in 7 of the 11.

In most instances a standardized digitalis leaf was used in the form of compressed tablets. The potency was 80 mg. per cat unit. In 2 cases tablets of lanatoside C were used and in 5 cases tablets of digitoxin.[4] These

TABLE 2.—*Comparison of Maximum Rate After Atropine with That After Physical Exercise After Varying Doses of Digitalis*

Patient	Maximum Ventricular Rate After		Ventricular Rate During Rest
	Atropine	Exercise	
(A) No Digitalization			
A. A.	170	170	100
D. C.	90	110	50
J. W.	170	140	130
J. C.	170	160	110
W. S.	175	180	115
M. G.	180	150	100
C. F.	110	130	60
Averages	152	149	95
(B) Predominantly "Vagal" Digitalization			
A. A.	170	190	90
D. C.	110	110	70
J. W.	120	90	80
J. C.	115	110	90
W. S.	170	180	80
M. G.	140	145	60
C. F.	121	126	74
E. P.	170	150	110
R. K.	112	115	56
F. M.	129	118	62
Averages	136	133	77
(C) Predominantly "Extravagal" Digitalization			
A. A.	130*	110	50
D. C.	100	80	50
J. W.	90	65	60
W. S.	100	110	90
C. F.	90	100	50
E. P.	120*	130	60
T. S.	103	138	66
Averages	105	105	60

* These 2 cases are included in the "extravagal" group even though a large vagal element still persists, because a much more marked vagal response was present at another stage, as seen by the results with the same cases in group B.

were dispensed in the clinic in suitable numbers, and patients were directed to take them daily in a single dose. The experiments were performed after the patient had received a given daily dose for a period varying from one to three weeks.

RESULTS

In table 1 are assembled the details of the experiments on the 11 patients. It may be noted that the effect of atropine on the ventricular rate, as well as that of exercise, varies in the same patient and in different patients with different degrees of digitalization. However, the average ventricular rate after blocking of the vagus by atropine in the group as a whole was practically identical with that immediately after severe physical exercise, namely 130 beats a minute after atropine and 128 a minute after the physical exercise.

In table 2 the results have been rearranged in order to compare the effect of atropine with that of exercise during different grades of digitalis action. The experiments are arranged in three groups: (A) before digitalization, (B) during digitalization by the predominantly "vagal" mechanism and (C) during digitalization by the predominantly "extravagal" mechanism. Groups B and C are defined by the effect of atropine. When atropine caused marked acceleration, usually to a rate considerably above 100 beats a minute, the cases were placed in the "vagal" group. When, as after larger doses of digitalis, atropine caused less acceleration, usually to a rate not greatly exceeding 100 a minute, the cases were placed in the "extravagal" group.

TABLE 3.—*Proof That Physical Exercise Produces the Same Maximum Ventricular Rate as Blocking the Vagi by Atropine*

	Ventricular Rate During Rest	Maximum Ventricular Rate After	
		Atropine	Exercise
A. No digitalization	95	152	149
B. Predominantly "vagal" digitalization	77	136	133
C. Predominantly "extravagal" digitalization	60	105	105

When the results are examined in this way it may be noted that the maximum ventricular rate after the administration of atropine is highest when the patient is without digitalis, is somewhat lower after moderate digitalization and is considerably lower after more intense digitalization. Nevertheless, the average maximum ventricular rate after extreme exertion is practically identical with that after blocking of the vagus by atropine in all three stages. These facts are more readily seen in table 3, in which the averages of the results of table 2 are assembled.

In isolated instances the maximum rate reached by blocking the vagi is significantly different from that after exercise. In eleven out of twenty-four experiments listed in table 2 a difference of at least 20 beats a minute occurred. In 7 cases, or 29 per cent, the acceleration after exercise was from 20 to 30 beats less than would be the case if vagal tone were completely removed. In 4 cases, or 17 per cent, the maximum ventricular rate after exercise was from 20 to 35 beats higher than could be accounted for solely by the removal of vagal tone.

TABLE 4.—*Case of W. S.: Proof That Resting Ventricular Rate May Fail to Reveal Different Degrees of Digitalization*

Doses of Digitalis	Resting Ventricular Rate	Maximum Ventricular Rate After	
		Atropine	Exercise
None	115	175	180
Moderate	80	170	180
Large	90	100	110

COMMENT

It is well known that patients with heart disease, and especially those with auricular fibrillation, frequently show an exaggerated response to exercise.[5]

4. The lanatoside C (cedilanid) was supplied by Sandoz Chemical Works, Inc., and the digitoxin (Digitaline Nativelle) by Laboratoire Nativelle.

5. Blumgart, H.: The Reaction to Exercise of the Heart Affected by Auricular Fibrillation, Heart **11**: 49 (Jan.) 1924. Lewis.[1]

But whether this response to exercise by these patients is mediated through decreased vagal tone or through some other factor such as stimulation of the accelerators is not established. The normal mechanism for cardiac acceleration by physical exercise in the dog was shown by Gasser and Meek [6] to be due to decreased vagal tone, and they suggested that accelerator stimulation participates only in times of great need. Boas [7] suggested that the accelerators play a role in the rapid and labile ventricular rate or patients with auricular fibrillation who have exophthalmic goiter or autonomic imbalance. Our experiments indicate that in the average patient with auricular fibrillation with or without digitalis the acceleration of the heart with severe physical exercise is due to decreased vagal tone, the normal mechanism seen in the dog.

This deduction is based on the observation that the maximum rate of the heart beat reached when the vagi are blocked by atropine in the patient with auricular fibrillation is the same as that attained during extreme grades of physical effort. When the degree of digitalization has been relatively light ("vagal" slowing), blocking the vagus with atropine as well as physical exertion produces marked acceleration of the ventricular rate to levels of the order of 150 a minute or more. When the doses of digitalis have been relatively larger ("extravagal" slowing), however, neither blocking the vagi by atropine nor physical exertion produces marked ventricular acceleration, usually not much above 100 a minute.

The type of cardiac slowing by digitalis in auricular fibrillation, whether by the "vagal" or by the "extravagal" mechanism, can therefore be ascertained either by blocking the vagus with atropine or by physical exertion. The two generally yield the same results. If a patient has been digitalized at complete rest in bed, and the ventricular rate has been reduced, for instance, to 70 a minute, the observation that 2 mg. of atropine sulfate injected intravenously fails to accelerate the rate appreciably above 100 beats a minute is, in the average case, a satisfactory indication that the exaggerated acceleration usually seen in patients with auricular fibrillation during physical effort will not occur.

While in the average patient with auricular fibrillation acceleration of the ventricular rate during exercise takes place by a decrease of vagal tone, the results of our studies showed some exceptions. In a few instances the level of the ventricular rate after physical exercise was lower than after complete blocking of the vagi. These probably indicate that the patient discontinued the effort before vagal tone was completely lost. In 4 cases, however, the ventricular rate rose to a level higher than could be accounted for by the complete blocking of the vagus. This indicates that under certain conditions the patient with auricular fibrillation may utilize some mechanism for acceleration of the ventricle during physical effort in addition to the decrease of the vagal tone. In one of these the resting rate was 66 a minute during full digitalization. Blocking the vagus accelerated the rate to 103 a minute, but during physical exertion the rate rose to 138 a minute. We do not know what this accessory mechanism is. There are several possibilities, such as direct stimulation of the accelerators or their indirect stimulation through the effects of asphyxia on the secretion of epinephrine. It may be noted that the 4 patients in whom such an accelerator mechanism operated during effort had the most advanced degree of cardiac damage and failure of the entire group, especially patients D. C. and T. S. They were the only ones of the entire series who required intravenous injection of organic mercurials in addition to digitalis to control their failure sufficiently to enable them to be up and about.

At this point attention should be directed to the fact that the level of the resting ventricular rate in digitalized patients with auricular fibrillation does not reveal whether the slowing is produced by the "vagal" or by the "extravagal" mechanism. Attention was called to this matter in another study [8] in which the explanation of the phenomenon was discussed. Table 4 shows a case in the present series which illustrates this point. The resting rates after moderate and after large doses of digitalis were practically identical, but after the moderate doses atropine as well as physical exertion produced very marked acceleration, whereas after large doses of digitalis the same factors produced very little acceleration.

SUMMARY AND CONCLUSIONS

1. The average patient with auricular fibrillation has acceleration of the ventricular rate during exercise chiefly, if not entirely, by decrease of the vagal tone. In these cases blocking the vagus by means of atropine accelerates the ventricles to the same maximum level as extreme physical exertion.

2. There is an indication that in some patients, especially those with advanced heart failure, an accessory mechanism for acceleration may also be invoked during extreme physical effort.

3. Exaggerated acceleration of the ventricles caused by physical exercise in patients with auricular fibrillation can be prevented in most cases by "extravagal" digitalization, a state in which the ventricles are slowed chiefly by the direct action of digitalis on auriculoventricular conduction and in which vagal tone has been, for the most part, lost. It is produced by relatively large doses of digitalis. In this state, the ventricular rate rarely exceeds 100 beats a minute after the vagi are blocked by atropine or after severe physical effort.

4. The rate of the ventricles during rest does not disclose whether the digitalis has caused the slowing by the "vagal" or by the "extravagal" mechanism. There are two methods for determining "extravagal" digitalization: (1) the atropine test (the intravenous injection of 2 mg. of atropine sulfate) and (2) physical exercise. After neither of these tests will the ventricular rate rise appreciably above 100 beats a minute if enough digitalis has been given to cause slowing by the extravagal mechanism.

1300 York Avenue.

6. Gasser, H. S., and Meek, W. J.: A Study of the Mechanisms by Which Muscular Exercise Produces Acceleration of the Heart, Am. J. Physiol. **34**: 48, 1914.

7. Boas, E. P.: Digitalis Dosage in Auricular Fibrillation, Am. Heart J. **6**: 788 (Aug.) 1931; The Ventricular Rate in Auricular Fibrillation: Studies with the Cardiotachometer, ibid. **4**: 499 (June) 1929.

8. Gold, Harry; Kwit, N. T.; Otto, Harold, and Fox, Theodore: Physiological Adaptations in Cardiac Slowing by Digitalis and Their Bearing on Problems of Digitalization in Patients with Auricular Fibrillation, J. Pharmacol. & Exper. Therap. **67**: 224 (Oct.) 1939.

Fatigue.—The most striking effects of fatigue are on the nervous system, where it produces irritability, nervousness, restlessness. Enthusiasm is gone, judgment warped. The world looks drab. Child specialists tell us that many behavior problems in children are due to fatigue. There is evidence that fatigue lowers resistance to disease, and it very definitely interferes with recovery from infections.—Diehl, Harold S.: Healthful Living, New York, McGraw-Hill Book Company, Inc., 1941.

THE FORMATION OF RENAL CALCULI IN BEDRIDDEN PATIENTS

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My purpose in this paper is to call attention to, and illustrate by the report of cases, the effects of inadequate renal drainage and of phosphaturia in the formation of renal calculi in bedridden patients. In my experience it has been the phosphatic stones (calcium phosphate) which have produced the most serious results, because they can form rapidly and without symptoms, so that they may have already produced a serious condition when they are discovered.

The fact that renal calculi are frequently formed in patients having paralyses which produce disturbances of urination, such for example as fractures of the spine and poliomyelitis, has been so generally recognized and so frequently reported that it is unnecessary to devote any space here to confirming it. The discussions concerning preventive treatment have emphasized the correction of metabolic disturbances, the relief of urinary obstruction, the removal of foci of infection, regulation of the diet and the administration of vitamins and have neglected to stress adequately the importance of obtaining renal drainage by proper posture aided by a large urinary output, the two things which, I think, are perhaps of greatest importance in the prevention of the phosphatic stones.

Of course urinary obstruction, focal infection, hyperparathyroidism, infections of the urinary tract and vitamin deficiencies are important etiologic factors in the formation of renal calculi, and they may well be of considerable importance in some cases, but they are at times not the essential etiologic factors, since phosphaturia and poor drainage with the increased excretion of calcium, which seems to occur in patients with paralyses, may cause and are in themselves capable of producing phosphatic calculi.

Furthermore, there is no doubt but that the processes which are now considered to be the usual etiologic factors in the formation of stones frequently occur in these patients. The past history of some of them shows that the propensity to the formation of stones had already existed before the occurrence of the illnesses or accidents which caused them to be bedridden. In other instances the stone-forming process probably developed afterward. These kinds of stones or beginning stone formations may, of course, cause serious complications which I shall not discuss here.

PHOSPHATIC STONES

I have had 3 patients who had multiple phosphatic renal calculi after poliomyelitis; 1 had both kidneys full of stones and 2 had one kidney full and some stones in the other one. Two of these patients died, and the other one, after many operations, has attained fairly good health.

Last year I had a patient whose condition, when he came to me, was, I feel sure, the early stage of the condition that I found in the other patients—five or six of the minor calices of the left kidney were filled or almost filled with many small stones and sand, and many of the minor calices of the right kidney contained a little sand, so that a faint outline of the calices could be seen in a roentgenogram. There was one stone in the right kidney about 1 by 1 by 0.5 cm. The patient had been bedridden for about three months because of a fractured femur which refused to unite satisfactorily, and he had been given two tablets a day of dicalcium phosphate for two months; he had phosphaturia when I saw him. A stereoscopic urogram showed that the major and minor calices of the kidneys, especially of the left kidney, ran almost directly dorsal from the pelvis and that the pelvis was probably of the anterior variety. Therefore, drainage free enough to rid the kidneys of the sand and the stone could not occur unless the patient would lie on, or almost on, the ventral surface of the body. He began at once to assume this position for several hours a day, having each time first drunk a large amount of water. He passed all the sand and small stones from the kidneys without much difficulty, except the large stone in the right kidney, which would not pass through the ureter and later on had to be removed at operation.

In reviewing a large number of stereoscopic urograms I have found that it is not unusual to find the calices of one, sometimes of both kidneys, running backward from the pelvis, so that the pelvis lies almost entirely ventral to the major calices, a condition which I had paid little attention to until I found it in this patient.

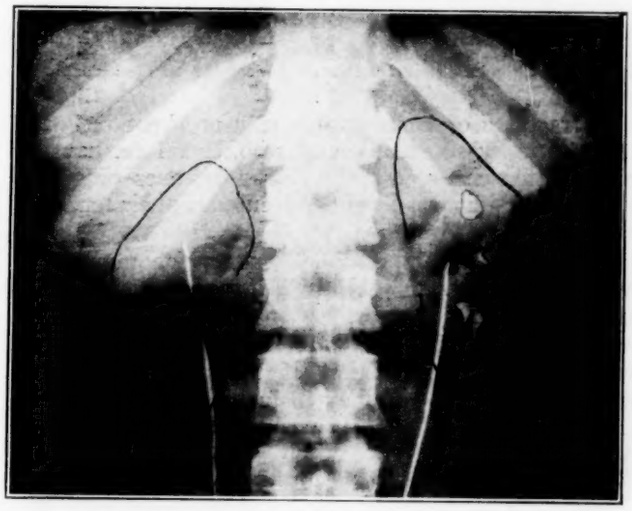

Fig. 1 (case 4).—Sand and small stones fill the minor calices on the left. One stone is seen in the right pelvis and there is also a little sand in a few of the minor calices of the right kidney which shows in the roentgenogram but not here.

The essential difference between the commonly encountered processes of stone formation and the formation of these phosphatic stones is that the phosphatic stones are usually the result of only three things: (1) a precipitation of the urinary phosphates either as amorphous phosphates or as phosphatic crystals or both; (2) a lack of an adequate drainage of the renal calices and pelves due to improper posture and to an inadequate intake of fluid, and (3) increased calcariuria. I cannot be sure that the increase in the calcium in the urine always occurs or that it is an essential factor.

Phosphaturia is by no means an uncommon occurrence in the bedridden patients I have seen, and it is due to a number of different causes: (1) metabolic disturbances resulting from the disease (trauma, infection, fever and toxemia); (2) disturbances of the gastrointestinal tract caused by being bedridden and by the drugs given to relieve pain and nervousness; (3) too much citrus fruit juice; (4) saline cathartics containing phosphates (particularly those containing sodium bicarbonate), and sodium phosphate used by itself as a purgative or acid sodium phosphate used for

acidifying the urine; (5) sodium bicarbonate and magnesium oxide which are so frequently given to these patients for "indigestion" and "acid stomach," and (6) inappropriate diet.

Of course, the formation of gravel or renal calculi in patients with extensive and more or less permanent paralyses is a more serious matter than it is in patients

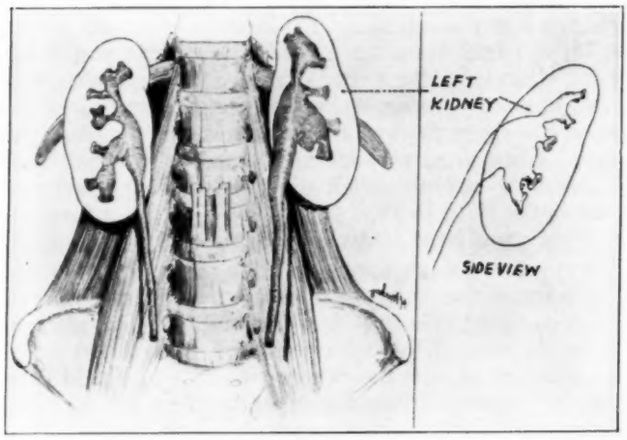

Fig. 2.—Ventral position of the pelvis of the left kidney. The ureter, next to the pelvis, can be seen to run a little farther ventrad. The major and minor calices point dorsal—a condition which does not permit good drainage of the minor calices unless the patient lies on the abdomen.

with fractures of bone who usually are kept in bed a comparativetly short time and who, therefore, have so much better chance of passing small stones or gravel out of their kidneys and of being cured of their tendency to form stones.

The prevention of complications, which may result from renal calculi in patients with paralyses when the calculi have already formed or begun to form, can usually be accomplished by careful medical and urologic attention. The prevention of the serious condition which may result from extensive formation of phos-

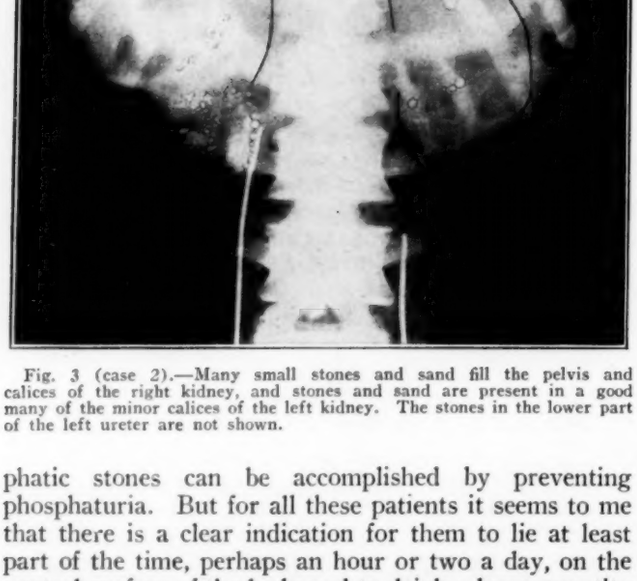

Fig. 3 (case 2).—Many small stones and sand fill the pelvis and calices of the right kidney, and stones and sand are present in a good many of the minor calices of the left kidney. The stones in the lower part of the left ureter are not shown.

phatic stones can be accomplished by preventing phosphaturia. But for all these patients it seems to me that there is a clear indication for them to lie at least part of the time, perhaps an hour or two a day, on the ventral surface of the body and to drink a large quantity of water before they do so. Some of the patients with fractures, of course, cannot be moved from the dorsal position for several weeks, but it is not likely that during that period extensive formation of stones will occur or serious complications develop if the aforementioned precautions are taken.

REPORT OF CASES

CASE 1.—A married man aged 30, who had had colic in the right kidney fifteen years before and passed some small renal calculi, was admitted to Piedmont Hospital Jan. 1, 1937. He had had poliomyelitis six months before with more or less complete paralysis of the lower limbs. He had been in a cast nine weeks and had urinated by means of a retention catheter for several weeks. He had had fever and malaise a good deal of the time since having the poliomyelitis. Recently he had been worse, and in the past week vomiting had occurred. Examination showed the urine to be alkaline and cloudy and to contain pus and gram-negative bacilli. The pelvis and calices of the right kidney were filled with not very dense stones. Roentgenograms showed a more evident shadow in the region of the pelvis of the left kidney. There was no infection of the left kidney, which was functioning well. There was infection of the right kidney; no function was shown by the phenolsulfonphthalein test.

Fig. 4 (case 3).—The pelvis and calices of the right kidney are filled with stones of varying size. A good many stones of various sizes are present in the minor calices of the left kidney.

On January 8 nephrectomy was done on the right side. The stones were found to be soft and largely phosphatic. On January 15 a perianal abscess was opened by Dr. Eubanks. On January 30 ureterolithotomy was performed for impacted stone. Phosphatic sand was found in the ureter above the stone. A nephrostomy tube was left in and the patient returned to his home in South Carolina.

On Oct. 1, 1939 the patient died. The remaining kidney had become completely filled with stones many months before death.

CASE 2.—A schoolgirl aged 16, admitted to the hospital Nov. 26, 1937, had had poliomyelitis in July 1937 with resultant paralysis of the lower limbs and some paralysis of the arms. Examination of the urine revealed severe phosphaturia and many gram-negative bacilli and gram-positive cocci. Roentgenograms showed the pelvis and calices of the left kidney to be completely filled with small stones and several small stones in the lower part of the left ureter. There were some small stones in five or six of the minor calices of the right kidney. Gram-negative bacilli and gram-positive cocci were obtained from the left kidney and only a few gram-positive cocci from the right kidney.

The patient was carried home to Lexington, Ky. Dr. Douglas Scott has performed a number of operations on her ureters and kidneys since then and on May 31, 1940 wrote me that she "is now living in a wheel chair and this week completed her high school work and graduated." She is not free of stones.

CASE 3.—A schoolboy aged 16, admitted to the hospital Feb. 21, 1938, had had poliomyelitis six months before with complete paralysis of the lower limbs. Examination showed the urine to be cloudy and alkaline and to contain much pus and many staphylococci. The pelvis and calices of the right kidney were filled with small stones. There were some larger stones in the left kidney.

On March 1 pyelolithotomy was done on the left side, and a nephrostomy tube was left in. Phosphatic stones and sand were removed from the pelvis and calices.

On April 1 pyelolithotomy was done on the right kidney, and a nephrostomy tube was left in.

On April 18 the patient died. Autopsy revealed a perforation of the jejunum and fibrinous peritonitis, the cause of which could not be determined. There were no stones in the kidney.

CASE 4.—A man aged 27, admitted to the hospital Feb. 25, 1940, had broken his right femur three months before admission. Healing was unsatisfactory and he had just been sent to Atlanta to an orthopedic surgeon. For two months he had taken two tablets of dicalcium phosphate daily and smaller doses during the remaining month. Blood had appeared in the urine the day before admission.

Examination of the urine revealed it to be alkaline and marked by phosphaturia and many red blood cells. Roentgenograms showed most of the minor calices of the left kidney outlined as though they were partially filled with stones and those of the right kidney faintly outlined as though they contained a little sediment of sand or gravel. There was one shadow about 0.7 cm. in diameter in the region of the right kidney.

On a suitable diet, taking plenty of water and lying on his abdomen two to three hours a day, the patient passed phosphatic sand and many small stones. All the stones were passed except the large one in the right kidney, which could not go through the ureter and was later removed at ureterolithotomy.

SUMMARY

Of 4 patients with multiple small phosphatic stones and sand in the kidneys, 3 had had poliomyelitis with rather extensive paralyses, and the fourth, a fractured femur which would not unite satisfactorily. The last patient had many small renal calculi, which were all passed by having him drink large quantities of water and lie three or four hours a day on his abdomen. One large stone would not pass through the ureter.

A stereoscopic urogram of patient 4 showed that the minor calices of the left kidney pointed dorsal from the major calices, which in turn pointed back from the pelvis; somewhat the same condition existed in the right side, and it was evident that the stones had accumulated in the kidneys because of this condition and because of his failure to lie on his abdomen. A study of stereoscopic urograms of a large number of patients shows that kidneys with anterior pelves and dorsal-pointing calices occur fairly frequently; I believe that the drainage of sand and small stones from kidneys of that character does not occur unless the patient lies on the ventral surface of his body.

Multiple phosphatic stones can probably form in the kidneys solely as the result of phosphaturia and a lack of proper drainage due to an improper position in bed; perhaps an increased calcariuria is necessary. I do not know.

Naturally all the other known etiologic factors of the formation of stones may exist in bedridden patients and no doubt often do exist, and every precaution to prevent this formation should always be taken, including drainage by changes in posture.

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THE IMMEDIATE AND LATE EFFECTS OF THE INTRATHECAL INJECTION OF IODIZED OIL

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Although generally recognized as a valuable adjunct in the diagnosis of lesions of the spinal cord, myelography by means of iodized oil [1] has been criticized on three scores, namely that it is irritating to the spinal meninges, that it may not demonstrate early lesions and that occasionally it shows a block where no lesion can be found at operation. The first of these, the irritating effect, has been emphasized more than the other objections.[2] The majority of reports have stressed the immediate reactions, but a few have mentioned delayed deleterious effects from the injected iodized oil. The increased use of myelography with iodized oil as a diagnostic aid in the sciatic syndrome has made imperative a comprehensive examination of the immediate and late effects of the intrathecal injection of iodized oil.

In order to assess these reactions, we reviewed all the cases at the University of Chicago Clinics in which iodized oil had been used to examine the spinal canal. The histories of the patients were carefully studied with particular attention to any immediate reactions to the injected iodized oil. Letters were sent to the patients who were still living asking them to return for a check-up. At no time was the purpose of the examination mentioned to the patient—none, so far as we know, was aware of our particular interest. On their return a detailed interval history was obtained with particular emphasis on those points which might indicate deleterious effects of the previous injection of iodized oil, such as pain in the extremities, headache, paresthesias, paralyses and gastrointestinal or urinary disturbances. A complete neurologic examination was then made. All but 3 of the patients who returned were placed on the tilting table, and the spine was examined with the fluoroscope, spot films being made for a permanent record of the examination. In the later cases a lateral roentgenogram of the skull was taken.

IMMEDIATE EFFECTS

Between 1928 and 1939, 150 patients were examined with the aid of intrathecal injections of iodized oil. Usually 2 cc. of iodized oil was used, but in a few cases when the fluoroscopic appearance was not sufficiently clear for a definite diagnosis another 2 cc. was introduced into the subarachnoid space. The injection was made into the spinal canal by lumbar puncture in the majority of the cases, but in 14 instances the oil was injected into the cisterna magna. The site of injection did not appear to make an appreciable difference in the resulting symptoms or sequelae.

Clinical Manifestations.—Of the entire group, 46.4 per cent had no subjective reaction of any type and

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1. The iodized oil used in this study was 40 per cent iodine in poppyseed oil, except for a few cases in which the iodine concentration was only 20 per cent.

2. Spurling, R. G., and Grantham, E. G.: Neurologic Picture of Herniations of the Nucleus Pulposus in the Lower Part of the Lumbar Region, Arch. Surg. **40**: 375-388 (March) 1940. Oldberg, Eric: A Plea for Respect for the Tissues of the Central Nervous System, Surg., Gynec. & Obst. **70**: 724-725 (March) 1940.

the temperatures did not exceed 99 F. during the three days after the injection. Fever was the most common sequel; 29.6 per cent of the patients had a temperature of 99 to 100 F. and 24 per cent over 100 F. The highest temperature noted was 103 F. The fever lasted only twenty-four to forty-eight hours, and in none of the cases did it persist as long as seventy-two hours. Sex did not seem to play a role in the severity of the reaction. Those patients having a tumor of the spinal cord or a complete block to the iodized oil were less likely to have a febrile reaction to the oil than those who did not have a tumor or a block (table 1).

Other symptoms or signs noted immediately after injection of the iodized oil were headache (23 cases), aggravation of previous symptoms (9 cases), nausea (2 cases), vomiting (2 cases) and stiff neck (1 case). All these symptoms and signs usually subsided within seventy-two hours after the injection of the iodized oil into the spinal canal.

Many authors have noted some or all of the aforementioned immediate ill effects of intrathecal injections of iodized oil. Fever and headache have been considered the most common complications.[3] The other manifestations just noted have been present less frequently. Dizziness was given by Schönbauer[4] as a rather frequent complaint. Peiper,[5] Albrecht[6] and Wartenberg[7] have reported paralyses of the cranial nerves, especially of those controlling the eye muscles. Rodríguez de Mata[8] reported a case of temporary amaurosis after the use of ascendant iodized oil.

TABLE 1.—*Immediate Reactions of Temperature Following Intrathecal Injection of Iodized Oil*

	Temperature			Total
	Under 99 F.	99-100 F.	Over 100 F.	Percentage
Total cases (percentage)	46.4	29.6	24.0	100
Male (percentage).....	46.8	28.5	24.7	100
Female (percentage).....	46.0	30.0	24.0	100
Tumor (percentage).....	55.0	30.0	15.0	100
No tumor (percentage)..	38.8	30.6	30.6	100
Canal block (percentage)	55.0	28.3	16.7	100
No canal block (percentage)	40.0	29.2	30.8	100

The exaggeration of symptoms and signs previously present has been reported by many writers and is not an uncommon occurrence. Root pains, paresthesias and aches are frequent.[9] An increase in a partial paralysis has been seen occasionally.[10] The severe dyspnea reported by Wartenberg[7] and Fumarola and Enderle[11] should probably be considered an exacerbation of a preexisting condition. Bladder symptoms[10] (retention or incontinence) and constipation are usually of the same category. Messing[12] reported a case of paralytic ileus following an examination with iodized oil. In most instances these exacerbations have been temporary, lasting only a day or two. However, because lumbar puncture alone is not uncommonly followed by an exaggeration of symptoms in cases of tumor of the spinal cord, the foregoing observations are difficult to assess.

Changes in Spinal Fluid.—The changes in the spinal fluid after the injection of iodized oil have been discussed by many authors, but few systematic studies have been made. Immediately after the injection (up to six to eight hours), the spinal fluid remains normal,[13] but at about twenty-four hours it shows pleocytosis, with as many as 100 cells per cubic millimeter, although occasionally the reaction is more severe and the cells may reach 800 or 1,000 per cubic millimeter.[14] When the total count is below 100 cells per cubic millimeter the aggregation of cells is usually made up equally of polymorphonuclear leukocytes and lymphocytes; when the total count exceeds that number, the polymorphonuclear leukocytes tend to predominate. The height of the reaction is apparently the second, third or fourth day after injection, after which the cell count falls (fig. 1). A slight pleocytosis may persist for some time, rarely as long as six months or a year.[15]

The total protein of the spinal fluid also tends to increase after the injection, although it does not reach high concentrations. Ebaugh and Mella[16] stated that in twenty-four hours the protein reaches a peak at about 130 mg. per hundred cubic centimeters and maintains this level for several days. The figures given by Walsh and Love[15] did not show such high levels, although some of their patients had increased protein in the spinal fluid as long as seventeen days after the injection of iodized oil.

Besides the changes in cells and protein, Ebaugh and Mella[16] stressed the fact that many bloody taps occur after the injection of iodized oil, an observation which seems to be borne out by the report of Walsh and Love,[15] in whose series of 24 patients 13 had bloody spinal fluid. Ebaugh and Mella's interpretation of this as indicating a generalized congestion of the spinal vessels seems to be justified, for we have seen hyperemic roots of the cauda equina at operation following myelography with iodized oil but have never observed the spinal fluid to be grossly bloody.

No mention is made in the literature of the pressure of the spinal fluid after the intrathecal injection of iodized oil. In our series the pressure has never been increased, even when several hundred cells were present.

Fatal Reactions.—In none of our cases has a fatal outcome been referable to the injection of iodized oil.

3. Lüdin, Max: Ueber Myelographie, Schweiz. med. Wchnschr. **11:** 29-32, 1930. Nonne, M.: Kritische Bemerkungen zur Jodipin-Diagnostik bei Rückenmarkserkrankungen, Deutsche Ztschr. f. Nervenh. **102:** 6-13, 1928. Albrecht.[6] Fumarola and Enderle.[11] Peiper.[5] Schönbauer.[4] Selig and Rubert.[23] Sicard and Forestier.[14] Wartenberg.[7]

4. Schönbauer, L.: Die Ergebnisse der operativen Behandlung der Rückenmarkstumoren, Arch. f. klin. Chir. **154:** 645-692, 1929.

5. Peiper, H.: Die Myelographie im Dienste der Diagnostik von Erkrankungen des Rückenmarks, Ergebn. d. med. Strahlenforsch. **2:** 107-195, 1926.

6. Albrecht, K.: Die röntgenologische Darstellung von Rückenmarkstumoren durch Jodipin, Zentralbl. f. d. ges. Neurol. u. Psychiat. **41:** 921-925, 1925.

7. Wartenberg, R.: Beitrag zur Encephalographie und Myelographie, Arch. f. Psychiat. **77:** 507-531, 1926.

8. Rodríguez de Mata, T.: Un caso de amaurosis total y transitoria consecutiva a una inyección intrarraquídea de lipiodol, Actas Soc. de cir. de Madrid **2:** 165-168 (April-June) 1933.

9. Nonne, M.: Kritische Bemerkungen zur Jodipin-Diagnostik bei Rückenmarkserkrankungen, Zentralbl. f. d. ges. Neurol. **47:** 810-813, 1927. Armour, D.: Surgery of the Spinal Cord and Its Membranes, Lancet **1:** 423-430 (Feb. 26) 1927. Sharpe, W., and Peterson, C. A.: Danger in the Use of Lipiodol in the Diagnosis of Obstructive Lesions of the Spinal Cord, Ann. Surg. **83:** 32-40 (Jan.) 1926. Fumarola and Enderle.[11] Lüdin.[3] Schönbauer.[4] de Thurzó.[13] Oljenick.[20] Globus.[21]

10. Ruin, Edward: Irritant Effect of Iodized Oils Injected into Subarachnoid Space in Course of Myelography, Finska läk.-sällsk. handl. **76:** 15-21 (Jan.) 1934. Fumarola and Enderle.[11]

11. Fumarola, G., and Enderle, C.: Pericoli, inconvenienti e danni della mielografia con gli olii jodati, Radiol. med. **19:** 1271-1284 (Nov.) 1932.

12. Messing, cited by Fumarola and Enderle.[11]

13. de Thurzó, Eugen: Myelography with Lipiodol, Folia neuropath. estoniana **11:** 157-219, 1931. Odin, M., and Runström, G.: Iodized Oils as an Aid to the Diagnosis of Lesions of the Spinal Cord and a Contribution to the Knowledge of Adhesive Circumscribed Meningitis, Acta radiol. (supp.) **7:** 3-85, 1928. Ebaugh and Mella.[16] Walsh and Love.[15]

14. Sicard, J. A., and Forestier, J.: The Use of Lipiodol in Diagnosis and Treatment, London, Oxford University Press, 1932.

15. Walsh, M. N., and Love, J. G.: Meningeal Response Following Subarachnoid Injection of Iodized Oil, Proc. Staff Meet., Mayo Clin. **13:** 792-796 (Dec. 14) 1938.

16. Ebaugh, F. G., and Mella, H.: Use of Lipiodol in Localization of Spinal Lesions, Am. J. M. Sc. **172:** 117-123 (July) 1926.

Fatal reactions to iodized oil are rare, but a few deaths have been reported which must be considered. Two of the reports [17] are of cases in which no postmortem examination was made, so that they merit little comment. Five cases in which autopsy was done, however, have been reported in some detail. The role of the iodized oil in these cases is not easily determined, for each patient had serious and extensive disease of the spinal cord. In 1 of Albrecht's cases [6] after a bloody cisternal puncture iodipin [18] was injected into the cisterna magna. At autopsy blood was found in the posterior fossa and over the cerebral hemispheres. Albrecht's conclusion that this bleeding was the result of a drunken brawl before admission to the hospital is certainly open to question. That the cisternal puncture alone was responsible for the bleeding and fatal outcome is not impossible. Albrecht's [6] second case was no more conclusive. The patient had suffered from tetraplegia for three years and breathed mainly with her accessory respiratory muscles. Twenty-four hours after myelography by means of iodized oil she died of respiratory paralysis; but a few hours before her demise she had been given 0.03 Gm. of pantopon (hydrochlorides of the alkaloids of opium, principally morphine). The postmortem examination showed punctate hemorrhages in the spinal cord, but since the cause of the tetraplegia was not stated the significance of this condition is unknown. The etiologic relationship of the iodized oil to the fatal outcome in the presence of such complicating factors is not at all certain.

In the 3 other reports [19] of patients who died—all with cervical lesions of the spinal cord—there appears to be a more direct connection between the injection of iodized oil and the patients' deaths. All showed acute spinal meningeal reactions and 2 of them similar acute inflammatory changes about the brain stem. In their case, Alajouanine and Hornet [20] have suggested the ingenious hypothesis that the reaction is due to a disturbance of the cervical vasomotor mechanisms caused by acute compression of the cervical spinal cord resulting solely from the removal of spinal fluid. We are inclined to believe that the iodized oil played a more direct role in the fatality. That such fatal reactions are rare is evident from the fact that only these few cases can be gleaned from the world literature of the past fifteen years, during which time iodized oil has probably been used in thousands of cases.

LATE EFFECTS

Of the 150 patients in whom iodized oil was injected intrathecally, 47 returned and 9 out of town patients wrote us of their condition. The interval between the first and check-up examinations varied from one month to eleven years and one month. The average interval was three years and eight months.

Clinical Effects.—Although about half of the 47 patients who returned for a check-up examination had immediate ill effects from the injection of iodized oil, none, with the possible exception of 1 patient, had any symptoms at the time of the reexamination which might be referred to the injected oil. Thirty-four of the patients were definitely improved or completely recovered both subjectively and objectively. Thirteen of them showed no significant change in their condition. The latter group was composed largely of patients suffering from inflammatory or degenerative disease of the spinal cord in which improvement could not be expected.

One patient, a woman aged 32, might be considered to have suffered deleterious effects from the iodized oil. She originally entered with the complaint of unilateral sciatic pain. After its demonstration by the use of iodized oil, a herniated intervertebral disk was removed surgically. For about six months her symptoms were relieved, only to recur at the end of that time. A second operation for the identical unilateral symptoms which she had suffered before the first operation showed that the subarachnoid space was obliterated below the second lumbar vertebra and the roots of the cauda equina were matted together. No further protrusion of a disk could be found. Section of the posterior roots of the lower lumbar nerves on the involved side gave slight relief. It is impossible to be certain that the chronic hyperplastic arachnoiditis was the result of the iodized oil, for the greater part of the oil was found to be extradural at operation. That the arachnoiditis was responsible for the patient's pain is likewise uncertain, for the latter was strictly unilateral, while the arachnoiditis involved equally the roots of the cauda equina on the two sides. To make the case still more difficult to assess, certain psychogenic factors were present which might in themselves have been responsible in a large measure for the return of the patient's symptoms.

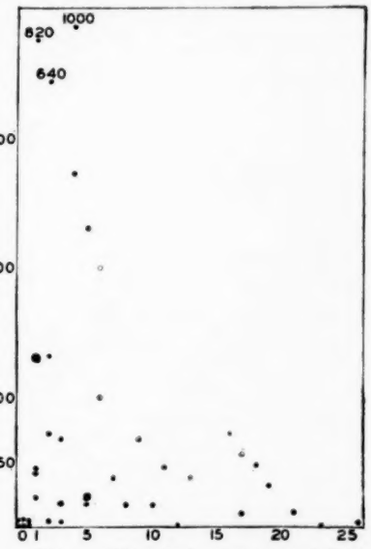

Fig. 1.—Pleocytosis of the spinal fluid following intrathecal injection of iodized oil. The ordinates represent the number of the cells per cubic millimeter of spinal fluid and the abscissa the days after injection. This chart is compiled from data gathered from the literature and our own cases. The two large dots represent the average of 13 cases as given by Ebaugh and Mella. We doubt that this chart gives a true picture of the average cellular reaction to intrathecal injections of iodized oil, for lumbar punctures are not performed in the usual case after the injection of iodized oil. The figures here probably represent the most severe reactions to the iodized oil.

Of the patients who wrote to us, 7 stated that they were considerably improved or recovered and only 2 were unimproved. Nothing in the letters suggested that they had experienced any ill effects from the intrathecal injection of the oil.

It must be concluded from this clinical study that no definite, deleterious, permanent clinical ill effects can be ascribed to the introduction of 2 to 4 cc. of iodized oil into the subarachnoid space. It is possible that in the exceptional case, such as mentioned here, the iodized oil may be associated with arachnoiditis, but it is impossible to attribute this complication entirely to the oil, for bleeding at or after the operation might well have been responsible for the disorder. This conclusion

17. Denk, W.: Ueber die Sicardsche Myelographie und ihre Ergebnisse, Arch. f. klin. Chir. **140:** 208-233, 1926. Bellucci, Bruno: Visualizzazione radiologica del canale dell'ependima in un caso di idromielia, Radiol. med. **21:** 1418-1426 (Dec.) 1934.

18. Iodipin is a combination of iodine (10, 20 or 40 per cent) with sesame oil.

19. Siebner, M.: Pachymeningitis cervicalis hypertrophica und akute Schädigung durch Myelographie, Chirurg **7:** 177-180 (March 15) 1935. Schönbauer,[4] Alajouanine and Hornet.[20]

20. Alajouanine, Théophile, and Hornet, T.: Oedème cérébro-méningé avec hyperthermie mortelle dans un cas de tumeur médullaire cervicale, à l'occasion d'une banale injection de lipiodol sous-arachnoïdien, Rev. neurol. **67:** 606-614 (May) 1937.

is in harmony with Globus's [21] study of a somewhat similar series of cases. Selig and Rubert [22] stated that even 5 to 6 cc. of iodized oil may be injected into the subarachnoid space without permanent ill effects.

Roentgenologic Effects in the Spinal Cord.—The roentgenographic observations can best be considered by a separate analysis of those patients who did not have laminectomies and of those who had operations on the spinal cord (tables 2 and 3).

In the group in which no operations were performed, with only a few exceptions (table 2), the greater part of the iodized oil was found to be freely movable in the subarachnoid space. In almost every case a few globules of it were fixed in the root sheaths of one or more of the nerves of the lower part of the spine, most frequently the sacral and coccygeal nerves (fig. 2). The

In contrast with the group of cases in which no operations were performed, the iodized oil within the spinal canal in the 24 cases in which an operation was done was usually fixed within the tissues and immobile (table 3). In 5 cases a few droplets flowed in the subarachnoid space, although the greater mass of the oil in these was fixed within the tissues. In only 8 instances did the major part of the oil move freely, and in all but 2 of these instances the dura mater had not been opened at operation. This point, we believe, is a major factor in deciding whether iodized oil will be fixed or not. If the dura mater is widely opened, air and blood may enter the subarachnoid space and meningeal reactions may result in extensive arachnoiditis. This may occur even if iodized oil is not present.

TABLE 2.—*Summary of Cases of Intrathecal Injections of Iodized Oil Without Laminectomy*

Name	Age	Diagnosis	Iodized Oil, 1st Examination	Interval Between Examinations, Months	Iodized Oil, 2d Examination	Clinical Result
R. M.	34	Sciatic syndrome	Normal *	48	Fixed except large drop	Unchanged
T. B.	29	No diagnosis	Normal	58	Normal	Improved
F. S.	28	Sciatic syndrome	Normal	24	Normal	Unchanged
J. Ka.	44	Sciatic syndrome	Normal	34	Normal	Improved
E. M.	42	Posterolateral sclerosis	Normal	23	Normal	Unchanged
G. G.	37	Arthritis	Normal	38	Normal	Improved
J. Ki.	54	Sciatic syndrome	Normal	44	Normal	Unchanged
E. Gr.	45	Radiculitis	Normal	29	Normal	Improved
E. B.	41	Multiple sclerosis	Normal	122	Normal	Unchanged
N. G.	35	Multiple sclerosis	Normal	35	Normal	Improved
H. Mc.	46	Arthritis	Normal	20	Normal	Recovered
E. Ga.	49	Arthritis	Normal	35	Normal	Improved
L. S.	24	Myelodysplasia	Normal	26	Normal	Improved
R. Be.	44	Fracture lumbar 1	Normal	68	Fixed	Improved
L. M.	17	Myelodysplasia	Normal	22	Normal	Unchanged
E. D.	62	Multiple sclerosis	Normal	107	Fixed except one drop	Unchanged
H. F.	59	Sciatic syndrome	Normal	5	Normal	Unchanged
M. S.	34	Sciatic syndrome	Normal	16	Fixed	Recovered
C. K.	29	Sciatic syndrome	Normal	22	Normal	Recovered
E. K.	26	Syringomyelia	Normal	30	Normal	Improved

* The term "normal" is used in tables 2 and 3 to denote that most of the iodized oil moved freely in the spinal canal and that no gross lesion of the canal was present. At the second examination a few drops of iodized oil were always found fixed in the sheaths of the nerve roots, as shown in figure 2.

longer the interval between the injection and the reexamination, the greater was the amount of iodized oil fixed along the nerve roots. When iodized oil had been present only three to four years, sufficient oil remained free in the subarachnoid space to form a pointed globule in the caudal sac when the patient was erect. Those patients examined after a longer interval showed only one or more small globules of iodized oil which were freely movable and proportionately more iodized oil fixed about the roots of the spinal nerves and in the caudal sac. In general, it seemed that the total amount of iodized oil in the spinal canal had decreased at the check-up examination as compared with that present at the initial examination. Since different machines with various target-film distances were used, no quantitative measurements could be made. In no case, however, had the oil been completely absorbed.

After operation, if the dura mater has been opened the iodized oil is rapidly encysted by the proliferation of the arachnoid membrane. Within one month of operation we have found the oil completely fixed in the tissues.

In those cases in which the dura mater has been opened, anteroposterior roentgenograms of the spine may give a false impression regarding the site of the fixed iodized oil. Frequently much of the oil is present in the tissues outside the spinal canal and only a small amount enmeshed in the arachnoid membrane. That within the subarachnoid space is usually found in the roots of the spinal nerves and as a globule at the end of the caudal sac.

The presence of iodized oil along the roots of the spinal nerves has been commented on by practically every author who has discussed the subject of myelography with iodized oil (fig. 3). When the oil is injected epidurally, the phenomenon is much more pronounced than when the injection is made in the subarachnoid space. Iodized oil has been found in the popliteal space within a few months after

21. Globus, J. H.: Contribution Made by Roentgenographic Evidence After Injection of Iodized Oil, Arch. Neurol. & Psychiat. **37**: 1077-1082 (May) 1937.

22. Selig, Seth, and Rubert, S. R.: The Effect of Large Amounts of Lipiodol Injected into the Spinal Subarachnoid Space, J. Mt. Sinai Hosp. **5**: 363-368 (Nov.-Dec.) 1938.

the former injection,[23] while it rarely extends far into the pelvis when injected intrathecally.

Effect on the Brain.—Since no patient in the present series had any complaint referable to the brain, particular attention was not directed to the examination of the skull in the early part of this study. The report of Garland and Morrissey[24] called our attention to the possibility of the presence of encysted iodized oil within the intracranial cavity. To determine the incidence of this occurrence, we have taken lateral roentgenograms of the skulls of the last 21 patients seen. In 7 of these patients small globules of iodized oil were seen within the intracranial cavity. In 1 case one small drop and in another two small globules were present in the posterior fossa. In the other 5 cases numerous small globules of iodized oil were scattered in the posterior fossa about the brain stem and the sella turcica (fig. 4).

It is noteworthy that in all 12 cases in which the iodized oil was fixed in the tissues in or about the spinal canal no oil was found within the intracranial cavity. The reverse, however, does not hold, for in 2 of the 9 instances in which the iodized oil flowed freely, none was seen in roentgenograms of the skull, and in 2 other cases only one or two small drops were present within the intracranial cavity. In each case in which the iodized oil was freely movable it was made to enter the basal cisterns by tilting the patient under fluoroscopic control. Immediately after having the patient assume the upright position another lateral roentgenogram of the skull was taken, but the iodized oil was no longer present intracranially. It is thus apparent that temporary introduction of iodized oil into the basal cisterns does not necessarily predicate its persistence there when the patient has resumed the normal upright posture.

It should be emphasized that the patients who had encysted intracranial iodized oil had no symptoms referable to its presence; in fact, 5 of the 7 patients were practically asymptomatic at the time of the examination.

Pathologic Effect.—We have had the privilege of examining the spinal cords of 4 patients who had iodized oil injected intrathecally some time before death. One of these instances is of limited value to us in this study because of the widespread disease (von Recklinghausen's neurofibromatosis) from which the patient suffered. The other 3 cases are presented in some detail, since reports of such cases are rare.

TABLE 3.—*Summary of Cases of Intrathecal Injections of Iodized Oil and Laminectomy*

Name	Age	Diagnosis	Iodized Oil, 1st Examination	Dura Opened	Interval Between Examinations, Months	Iodized Oil, 2d Examination	Clinical Result
J. L.....	23	Myelitis	Normal	Yes	125	Fixed	Unchanged
M. D.....	27	Intramedullary cord tumor	Block T 12	Yes	37	Fixed except one drop	Unchanged
L. W.....	30	Arachnoiditis	Defect T 10	Yes	115	Fixed	Unchanged
R. B.....	8	Teratoma	Block T 12	Yes	68	Fixed	Recovered
S. B.....	72	Extradural tumor	Block T 10	Yes	118	Fixed	Temporary recovery
H. B.....	18	Intraspinal cervical lipoma	Block C 4	Yes	42	Normal	Improved
O. T.....	36	Myelitis	Block T 12	Yes	51	Fixed	Unchanged
A. W.....	40	Neurofibroma	Block L 4	Yes	6	Fixed	Recovered
A. O.....	66	Meningioma	Block T 2	Yes	72	Fixed except one drop	Recovered
B. H.....	..	Neurofibroma	Block L 2	Yes	4	Partly fixed	Recovered
M. C.....	43	Prolapsed disk	Block L 4	Yes	23	Fixed	Recovered
J. C.....	30	Prolapsed disk	Block L 4	Yes	1	Fixed	Recovered
J. Z.....	29	Prolapsed disk	Block L 4	Yes	7	Fixed	Unchanged *
F. J.....	54	Prolapsed disk	Block L 4	Yes	5	Fixed	Improved
C. C.....	56	Prolapsed disk	Defect L 3	Yes	6	Normal	Recovered
C. P.....	40	Prolapsed disk	Defect L 5	Root sheath incised	3	Defect L 5	Improved
E. B.....	24	Prolapsed disk	Defect L 4	No	11	Defect L 4	Recovered
I. O.....	16	Prolapsed disk	Defect L 4	No	2	Normal	Recovered
D. C.....	56	Prolapsed disk	Defect L 4	No	2	Normal	Recovered
A. B.....	44	Prolapsed disk	Block L 4	No	5	Normal	Recovered
W. C.....	28	Prolapsed disk	Defect L 4	No	10	Normal	Recovered
L. D.....	39	Myelitis	Block T 1	No	52	Fixed except large drop	Improved
E. S.....	47	Extradural cyst	Defect L1-L2	No	54	Fixed	Improved
J. H.....	20	Extradural cyst	Block T 8	No	37	Fixed except few drops	Recovered

* Case referred to in text.

REPORT OF CASES

CASE 1.—*History.*—M. G., an Italian man aged 33, was admitted to the University of Chicago Clinics March 23, 1931 with a history of constant, severe, throbbing, frontal headaches every day and night for the previous two years; vomiting, not accompanied by nausea, almost every day for the previous sixteen months and weakness and dizziness on walking. On examination he was found to have a coarse nystagmus on looking to the left and a finer, quicker nystagmus on looking to the right, a slight right facial weakness and a positive Babinski response on the right side. All other physical and neurologic manifestations were normal. Two lumbar punctures were attempted, and on both occasions the fluid was blood tinged and under low tension. On jugular compression only a slight rise in pressure occurred. A cisternal puncture was made.

23. Pecker, R.: Image radiologique du tronc du sciatique après injection épidurale de lipiodol, Arch. d'electric. méd. **40**: 91-93 (Feb.) 1932.
24. Garland, L. H., and Morrissey, E. J.: Intracranial Collections of Iodized Oil Following Lumbar Myelography, Surg., Gynec. & Obst. **70**: 196-210 (Feb.) 1940.

The pressure was 30 to 40 mm. of spinal fluid, and the fluid contained 130 lymphocytes per cubic millimeter.

An inflammatory process being suspected, encephalography was attempted on March 31, 1931, but when slightly bloody fluid was found under low pressure which did not rise on jugular compression 1 cc. of iodized oil was injected and the encephalography abandoned. The fluid removed contained 650 red blood corpuscles and 44 lymphocytes. Examination of the patient on the tilting table under the fluoroscope revealed an irregular block at the fourth thoracic vertebra.

Four days later ventriculography was performed which showed a deviation of the falx to the left side and an absence of air in the right ventricle. The patient contracted bronchopneumonia and died April 7, 1931, seven days after the intrathecal injection of iodized oil.

A postmortem examination showed a psammomatous meningioma over the right occipital lobe, early lobar pneumonia and acute tracheobronchitis and slight adhesive spinal arachnoiditis.

Examination of the Spinal Cord.—Gross Description: The leptomeninges of the spinal cord were slightly yellow tinged. In the midthoracic region a few adhesions were present between the dura mater and the arachnoid membrane. The vessels on the surface of the spinal cord were injected. Unfortunately no mention was made of the condition of the coverings of the cauda equina or of the presence of iodized oil. The original description of the microscopic changes mentioned congestion of the pial vessels and thickening of the arachnoid membrane. Fortunately three blocks embedded in paraffin from the spinal cord had been stored. The blocks were from the lower cervical, midthoracic and midlumbar segments. New sections were made and stained with hematoxylin and eosin and impregnated by Perdrau's method for reticulin.

Microscopic Description: Examination of these sections confirmed the diagnosis of arachnoiditis. In all three regions the arachnoid membrane was thickened in small areas about the cord. In the subarachnoid space were a considerable number of lymphocytes, frequently arranged about the small blood vessels. The latter were distended with blood. An occasional small calcospherite was seen in the arachnoid membrane.

The neurons of the spinal cord appeared normal in all segments. The white matter also seemed normal, and there was no evidence of gliosis.

The diagnosis was, therefore, mild chronic arachnoiditis and meningitis.

CASE 2.—*History.*—A. H., a white man aged 36, entered the University of Chicago Clinics July 12, 1929 with the complaint of pain in the left upper quadrant of the abdomen and in the lower thoracic region posteriorly for five months. Roentgen examination elsewhere had been reported as showing a gastric ulcer, but the patient had not improved on ulcer management. General physical examination showed hyperesthesia over the eighth to the twelfth thoracic dermatomes on both sides and increased tendon reflexes in the lower extremities. On July 15 a lumbar puncture was performed. The initial pressure was 20 mm. of spinal fluid and on bilateral jugular compression the pressure rose slowly to 200 mm. The fluid contained 4 cells (type not given) and had a total protein content of 47.6 mg. per hundred cubic centimeters. A tumor of the spinal cord being suspected, 1 cc. of iodized oil was injected and the patient examined on the tilting table under the fluoroscope. No significant abnormality was noted.

Repeated examinations of the gastric contents showed an absence of free hydrochloric acid (except in one sample, in which 5 units was found) and a persistent benzidine reaction strongly positive for blood. Roentgenologic examination of the stomach after a barium meal revealed a gross filling defect and outpocketing of barium in the pyloric region which was interpreted as indicating a neoplasm of the pylorus. On July 24, 1929 an exploratory laparotomy disclosed an inoperable carcinoma of the stomach. The patient grew steadily worse and died August 26, six weeks after the injection of iodized oil.

A postmortem examination revealed a primary carcinoma of the body of the pancreas invading the stomach, duodenum and colon; metatases to the liver, diaphragm, urinary bladder and pelvic lymph nodes; bilateral hypostatic pneumonia, and slight spinal adhesive arachnoiditis.

Examination of the Spinal Cord.—Gross Description: At autopsy no metatases were found in the epidural space or about the spinal cord. Delicate, fine, fibrous adhesions were noted in the middorsal region binding the dura mater to the leptomeninges and occasional similar adhesions at other points along the cord. No other changes were seen.

The spinal cord, almost in its entirety, had been preserved in solution of formaldehyde, so that it was available for inspection at the time this report was prepared. The arachnoid membrane appeared clear and almost transparent. At the level of the fifth thoracic segment several adhesive bands were present between the arachnoid membrane and the dura mater, but these could be easily broken. No other adhesions were noted. The spinal cord and the roots of the cauda equina looked grossly normal. The dura mater also was normal in appearance. A roentgenogram of the preserved specimen showed no trace of iodized oil; probably the caudal sac, which was missing, had contained the greater part of it. Sections were made of the spinal cord through the cauda equina, the lower thoracic portion and the midthoracic portion. These were stained for myelin (Smith-Quigley) cells (Nissl) and reticulin (Perdrau).

Microscopic Examination: Sections stained for myelin showed no definite demyelination in any segment of the spinal cord. The roots of the cauda equina appeared well myelinated. The neurons of the anterior and posterior horns stained well and appeared normal, although a few were dark staining and angular. There was no evidence of gliosis in the gray or in the white matter. The arachnoid membrane was slightly, if at all, thickened. There was no proliferation of the arachnoid membrane about the roots of the cauda equina. Perdrau sections, showing more clearly the distribution of reticulin, confirmed this impression. In none of the sections could globules of iodized oil be identified.

The diagnosis was, therefore, slight chronic arachnoiditis.

CASE 3.—*History.*—S. B., a white man aged 63, was admitted to the University of Chicago Clinics Oct. 8, 1929 complaining of numbness and paralysis of the legs and a feeling of constriction and intense pain in the lumbosacral region radiating around the lower part of the abdomen. These symptoms had appeared about a month previously and had gradually increased in severity. Physical examination revealed no abnormalities other than those referable to the central nervous system. Both legs were paralyzed and spastic, with increased tendon reflexes and Babinski responses on both sides. From the ninth to the twelfth thoracic segments hypalgesia was present, below which was complete analgesia with slight sacral spacing.

A lumbar puncture was performed October 9. The initial pressure was 110 mm. of spinal fluid and there was no rise on jugular compression. The fluid was slightly yellow and contained 201.0 mg. of protein per hundred cubic centimeters. At this time 1.5 cc. of iodized oil was injected. Fluoroscopic examination of the spinal canal showed a complete block at the eleventh thoracic vertebra.

October 12 a laminectomy of the seventh to the twelfth thoracic vertebra was performed and an epidural mass partially removed. The dura mater was opened for a decompression. The tumor was diagnosed as a small round cell sarcoma. Following roentgen therapy the patient slowly recovered. Although clinical signs of damage to the spinal cord persisted, the patient had no weakness of the legs and walked well.

He felt well until Oct. 18, 1937, at which time he returned because of dysphagia, persistent hoarseness and a productive cough. Fluoroscopic examination during a barium meal revealed constriction of the esophagus at the level of the second to the fourth thoracic vertebra. A biopsy specimen from this area was reported to be normal esophageal epithelium. Biopsy of a lymph node from the right supraclavicular region disclosed the tissue to be "probably of an inflammatory nature." Roentgen therapy relieved the patient's symptoms.

On Aug. 26, 1939 he returned with the complaints of dry cough, loss of weight and dyspnea on exertion. Examination showed enlarged axillary and inguinal lymph nodes, areas of dulness in both pulmonic fields and a hard mass in the left side of the scrotum. Both legs were spastic and the tendon reflexes hyperactive. Extensor plantar responses were present

on both sides. Position and vibratory sensibility were fairly good in the legs. Fluoroscopic examination of the spine showed several globules of iodized oil fixed in the root sheaths of the sacral nerves and the tip of the caudal sac. By thoracentesis 550 cc. of straw-colored fluid was removed from the right pleural cavity. Orchidectomy on the left side revealed metastatic lymphatic tissue around the testis and ductus epididymidis. Biopsy of the inguinal glands revealed a lymphoblastoma. The patient recovered slowly under roentgen therapy.

He returned again December 28 because of pain in the chest and shortness of breath. His condition gradually progressed and he died Jan. 29, 1940.

An autopsy showed lymphoblastoma involving the axillary, inguinal, thoracic and abdominal lymph nodes; fibrinous and fibrous pericarditis; massive, bilateral, widespread, pulmonary fibrosis, bilateral fibrous pleuritis; right encapsulated empyema; lipid pneumonia and terminal bronchopneumonia, and mild arachnoiditis.

Examination of the Spinal Cord.—Gross Description: No gross tumor was seen in the epidural space, nor did the dura mater appear abnormal. Numerous fine adhesions between the dura mater and the arachnoid membrane were found along the spinal cord. The pia-arachnoid membrane of the spinal cord appeared slightly thickened.

Microscopic Description: Sections stained for myelin showed a mild demyelination of the pyramidal tract in the lower

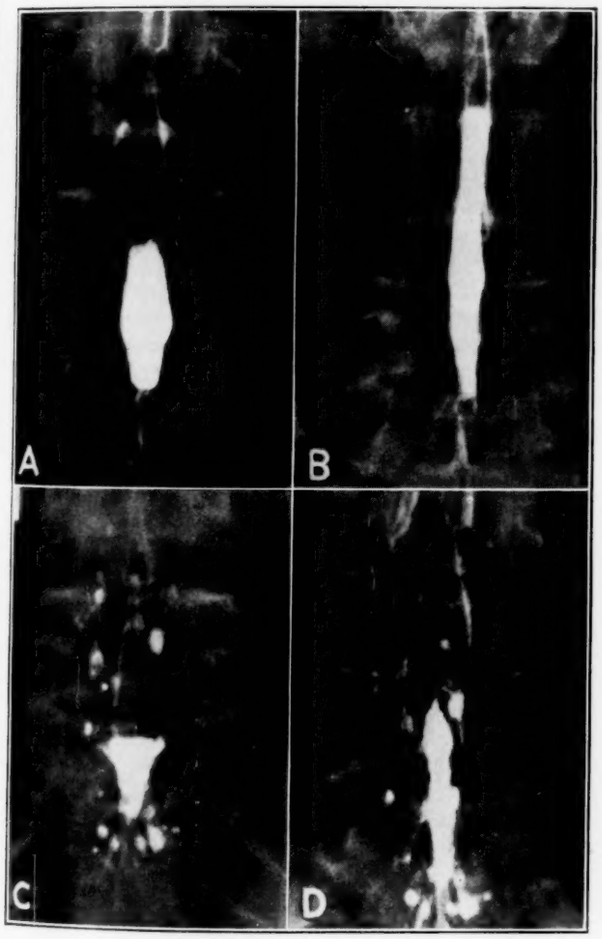

Fig. 2.—Appearance of the caudal sac containing iodized oil, the day after its injection (*A* and *B*) and four months after (*C* and *D*). The iodized oil is movable at the latter period, and the small globules fixed in the sheaths of the lumbar and sacral roots are evident.

thoracic and sacral regions with a corresponding gliosis of the lateral columns. In the cervical region the periphery of the lateral column was slightly pale, but there was no gliosis. There was, however, scattered demyelination of the column of Goll in the cervical region with slight gliosis. Except for these abnormalities, the myelin stains showed no abnormalities.

In all segments of the spinal cord the anterior horn cells were well stained and frequently contained small amounts of intracellular lipid. In the sacral region a few anterior horn cells were swollen and a few shrunken and surrounded by glial cells (neuronophagia). The other neurons of the spinal cord were not abnormal. The blood vessels showed mild medial thickening.

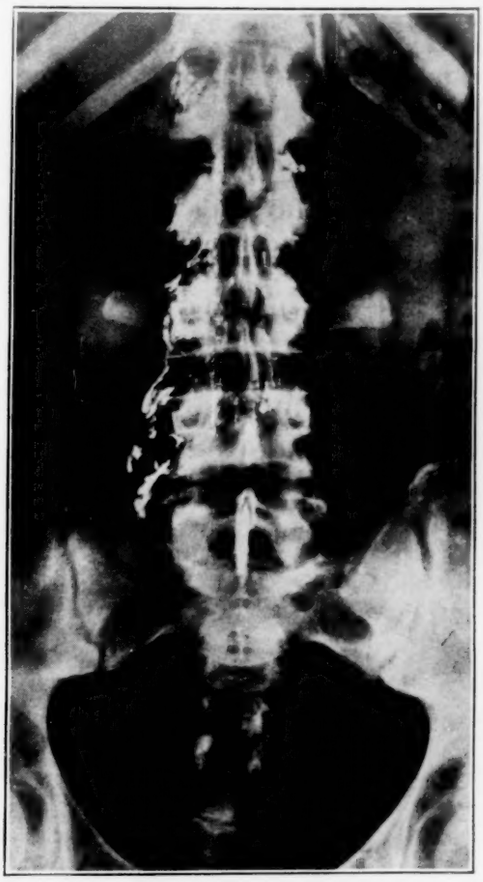

Fig. 3.—The spine of a patient the day after intrathecal injection of 20 per cent iodized oil. The light oil has extended farther along the spinal nerves than the usual iodized oil.

The arachnoid membrane was definitely thickened at all levels and occasionally contained a calcospherite. In its meshes were occasional lymphocytes. Sections of the second lumbar ganglion showed no abnormality in the cells or capsule of the ganglion.

The diagnosis, then, was mild arachnoiditis and mild myelopathy due to compression of the lower thoracic portion of the spinal cord.

COMMENT

The pathologic conditions in these 3 cases are similar in spite of the fact that they represent distinct temporal stages, the first showing the changes occurring at a week, the second those at six weeks and the third those occurring ten years after the injection of iodized oil. It must be emphasized that in 2 of these cases no operative procedures were carried out on the spinal cord and in the third a laminectomy was performed and the dura mater was opened.

In all 3 cases fine adhesions were present between the dura mater and the arachnoid membrane, but it seems likely that in the first case these changes were present before the injection of the iodized oil. In the second and third cases the iodized oil may have been responsible, although in the third case the presence of an epidural tumor and the operative procedure probably were factors. In the first case definite lymphocytic infiltration was present in the subarachnoid space, but

since there were 44 to 130 lymphocytes per cubic millimeter of spinal fluid before the intrathecal injection of iodized oil it is unlikely that the leptomeningitic infiltration was related to the injection. Only in the third case were significant abnormalities present in the spinal cord. These changes were mild and were compatible with the severe compression of the cord which the patient had suffered ten years previously. It should be noted that this patient had clinical signs of disease of the pyramidal tract—hyperactive reflexes and Babinski's reflex in both feet.

Comparative experimental studies have recorded more severe changes in the spinal cord and its membranes. Peiper and Klose [25] found degenerative changes in the myelin and areas of necrosis in the spinal cord when doses greater than 0.1 cc. of iodized oil were injected intrathecally in rabbits. Davis, Haven and Stone [26] injected 1.5 cc. of iodized oil cisternally in dogs after an artificial block had been produced in the spinal subarachnoid space, and they found proliferative changes in the leptomeninges and degeneration of the gray matter of the spinal cord. They concluded that the

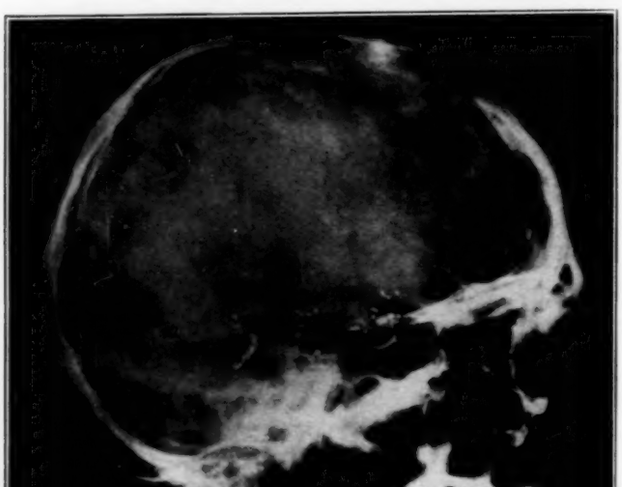

Fig. 4.—The skull of a patient, showing small globules of iodized oil about the brain stem and sella turcica. Two cc. of iodized oil had been injected nine months previously by lumbar puncture.

changes were due to the iodized oil, for only animals showing no clinical evidence of damage to the spinal cord were used for the injection. No mention was made of the alterations which may have occurred as the result of introducing a soft rubber drain in the extradural space to produce an artificial spinal block. In dogs Bruskin and Propper [27] described oil granulomas in the arachnoid membrane after intrathecal injection of iodized oil. Inflammatory vascular changes and degenerative alterations of the ganglion cells were found in the spinal cord. Lindblom [28] found evidence of acute leptomeningitis after he injected 1 cc. of iodized oil subdurally in rabbits. The leptomeningitis subsided in two or three weeks. Oljenick [29] found no gross changes twenty-four hours after cisternal injection of 1 cc. of iodized oil in the cisterna magna of a rabbit. In each of the preceding animal experiments the amount of iodized oil used was comparably much larger than the usual amount injected in man.[30]

Lindblom [31] studied the effect of both animal and vegetable iodized oils on the meninges. Various oils with different degrees of acidity were used, and it was found that the irritating effect decreased as the acidity decreased. Iodized animal oils, such as cod liver oil, were much more irritating than vegetable oils. The animal oil is emulsified by cerebrospinal fluid, and rapid splitting takes place, producing products, chiefly fatty acids and hydrogen iodide, which are irritating to the meninges.

Although the changes in the spinal cord and its membranes in animals after intrathecal injections of iodized oil are fairly severe, the constant pathologic changes—a slight proliferation of the arachnoid membrane with a few fine dural adhesions—in the human spinal cord following the injection of iodized oil are minimal. Constant parenchymal changes are not present. These alterations are in full agreement with the changes noted by Brown and Carr,[32] who studied the spinal cord of a patient six months after an injection of iodized oil. Globus [21] stated that the 3 patients he examined showed no evidence of leptomeningitis. Donat,[33] however, found in 1 case chronic leptomeningitis with iodized oil in a mass of inflammatory tissue.

These slight pathologic changes in the spinal cord and its coverings agree well with the fact that the iodized oil in patients not operated on is usually movable and flows freely up the spinal cord to the basal cisterns. If severe arachnoiditis were present one would expect the iodized oil to show numerous partial or complete obstructions within the spinal canal.

CONCLUSIONS

Intrathecal injection of iodized oil is followed in slightly more than half the cases by a mild fever of short duration, less frequently by headache and aggravation of previous symptoms. The cells and protein content of the spinal fluid are usually increased and may remain so for several days. Fatal reactions, although rare, have been reported.

Definite, permanent, clinical ill effects from the intrathecal injection of 2 to 4 cc. of iodized oil are extremely rare. Although the oil slowly becomes fixed in the sheaths of the spinal nerves and the caudal sac, it usually produces only mild arachnoiditis with fine adhesions between the arachnoid membrane and the dura mater. If, however, after the injection of iodized oil the dura mater is opened at operation, the oil commonly becomes rapidly encysted by proliferation of the arachnoid membrane. Pia-arachnoid reactions would therefore seem to be less likely if the dura is not opened.

Although about one third of the patients in whom iodized oil has been injected intrathecally have a varying number of small globules of it within the intracranial cavity, none has complained of any symptoms which might be referable to the oil.

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CHRONIC GRANULOCYTOPENIA CAUSED BY EXCESSIVE SPLENIC LYSIS OF GRANULOCYTES

REPORT OF CASE

R. O. MUETHER, M.D.

L. T. MOORE, M.D.; J. W. STEWART, M.D.

AND

G. O. BROUN, M.D.

ST. LOUIS

Since the first report of a case of acute agranulocytosis by Schultz in 1922 [1] numerous additional reports have continued to appear in the literature. The syndrome of granulocytopenia may arise under diverse conditions and from varied causes and may run either an acute or a chronic course. Hence it is distinctly neither a clinical nor a pathologic entity.

The various etiologies have been the subject of much investigation. The frequency with which certain drugs and industrial poisons may act as depressants of bone marrow is well known. Nutritional deficiencies,[2] bacterial toxins [3] and hormonal imbalance [4] have been found capable of producing the disease, at least experimentally. Acute agranulocytosis (which arises spontaneously and not as the obvious secondary effect of a known toxic agent) produces a more or less definite clinical picture and constant pathologic changes in the bone marrow.[5]

In 1939 Wiseman and Doan [6] reported a new syndrome of acute agranulocytosis caused apparently by excessive lysis of neutrophils by the spleen. This condition is characterized by splenic enlargement, peripheral granulocytopenia and myeloid hyperplasia of the bone marrow. Its mode of production is of a nature radically different from other types of granulocytopenia, in which two characteristic changes in the bone marrow take place. These consist of certain degenerative changes in the myeloid cells and aplasia or a proliferation of myeloblasts and a failure of maturation. Even in the latter condition aplasia is said to occur if the patient has survived the initial phases of the disease.[7] In the 3 cases reported by Wiseman and Doan there was myeloid hyperplasia of the bone marrow which was obviously compensatory in nature.

An additional case has been reported by Moore [8] which was accompanied by a thorough study both of the bone marrow and of the peripheral blood. Examination of the spleen clearly revealed large numbers of neutrophils being phagocytized by macrophages. The condition seems analogous to congenital hemolytic icterus and thrombopenic purpura, in which there occurs excessive lysis of red blood cells and platelets respectively.

It is our purpose to report another case. The patient has been under medical care for the past six years. She is alive and well one year after splenectomy. The pathologic conditions are in conformity with those noted in the 4 previously reported cases. The clinical history is of considerable interest.

From the Departments of Medicine, Surgery and Pathology, St. Louis University School of Medicine.

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REPORT OF CASE

History.—S. M. K., a white woman aged 31, entered the hospital complaining of a dull pain in the left upper quadrant of the abdomen, nausea and fatigue. The history of the present compaint extended back five years, and she had been hospitalized on five previous occasions. The pain, of a dull nature, did not radiate and was almost constantly present. On certain occasions it assumed a sharp, penetrating character, caused prostration and was associated with localized sweating over the splenic regions. These episodes were accompanied by fever, nausea and granulocytopenia. Successive white blood cell counts would reveal a steady drop of the leukocytes and, finally, complete disappearance of granulocytes from the peripheral blood. Remissions would then apparently occur spontaneously and were presaged by increasing numbers of immature forms of granulocytes in the peripheral blood. The average cycle lasted about three weeks. On previous admissions it had been found that the basal metabolic rate was low, averaging about —15 per cent. The patient had been given 3 grains (0.2 Gm.) of thyroid daily. Roentgen examination of the chest, the gastrointestinal tract and the vertebral column gave negative results. Cystoscopic

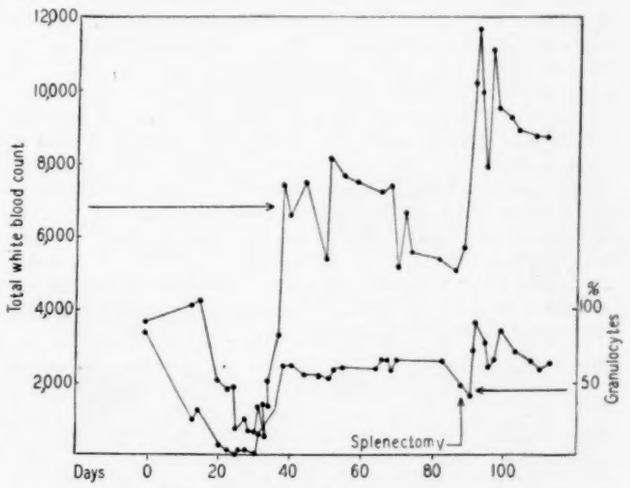

Fig. 1.—Total leukocyte count and percentage of granulocytes. The patient entered the hospital on the fifteenth day and was discharged on the one hundred and twelfth. There is a close correlation between the total number of leukocytes and the percentage of granulocytes.

examination had revealed low grade pyelitis on the left side on two occasions, which promptly cleared up on the administration of urinary antiseptics.

The initial attack had followed cystoscopic examination, during which the patient had been given a proprietary preparation of phenobarbital and aminopyrine. On two other occasions this preparation was administered before cystoscopic examination, and on both occasions granulocytopenia resulted. The patient, however, had attacks without the administration of drugs, and it is thought that the pain and associated symptoms which were the basis for the cystoscopic examination probably represented the beginning of a granulocytopenic interval and that the drugs were not important from an etiologic standpoint. This is substantiated by the fact that since splenectomy the patient has been given trial doses of both phenobarbital and aminopyrine without a fall in the number of granulocytes.

Physical Examination.—The patient was thin and somewhat anemic looking. The skin was dry and scaly. The pupils were round and equal, and the scleras were clear. Reaction to light and accommodation were both present. The ears, nose and throat were normal. No masses were palpated in the neck. The chest was of the asthenic type and symmetric. Expansion was free and equal, and the breath sounds were vesicular. The pulse rate was 100, and the rhythm was regular. The blood pressure was 100 systolic and 70 diastolic. There were no murmurs or thrills present. The abdomen was scaphoid.

The liver, kidneys and spleen were not palpable. A definite area of tenderness, which was associated with muscle guard, was found in the left upper quadrant of the abdomen immediately beneath the costal margin. It was most noticeable anteriorly and extended laterally to the midaxillary line. Neurologic, pelvic and rectal examinations gave essentially negative results.

Laboratory Studies.—The blood showed red blood cells 4,120,000, hemoglobin 72 per cent and white blood cells 2,150. The platelet count was 255,440. A Schilling hemogram showed 6 stab cells, 5 segmented forms, 2 large lymphocytes and 87 small lymphocytes. The urine was essentially normal. The level of blood sugar was 85 and the nonprotein nitrogen 30 mg. per hundred cubic centimeters. The Kahn reaction was negative. Examination of the bone marrow showed moderate hyperplasia.

Course in Hospital.—The patient continued to complain of great pain, which was relieved only with narcotics. The temperature ranged between 102 and 104 F. Treatment with blood transfusions, bone marrow extract and pentnucleotide appeared to have small effect on the leukocyte count, which dropped steadily. From the fifth to the ninth day the percentage of granulocytes varied from 0 to 2 per cent, and the total white cell count was 550 to 850 (fig. 1). A reversal then occurred, and there was a progressive rise in the total count and the number of granulocytes in the peripheral blood. On the nineteenth day the leukocyte count had reached 7,500 and the percentage of granulocytes was 61. For the ensuing seven weeks the count remained stabilized within normal limits. As the patient continued to complain of pain in the left upper quadrant of the abdomen an exploratory laparotomy was done with the purpose of removing the spleen if no other pathologic condition was found. The spleen was removed. The patient made an uneventful recovery and was discharged after a period of observation.

Gross examination of the spleen revealed that it was approximately three times the normal size and weighed 325 Gm. At operation there was evidence of old perisplenitis, and there were multiple adhesions to the surrounding structures. The spleen was bright red and firm. On section the normal structure of the spleen was found intact. The malpighian corpuscles were prominent and appeared hyperplastic.

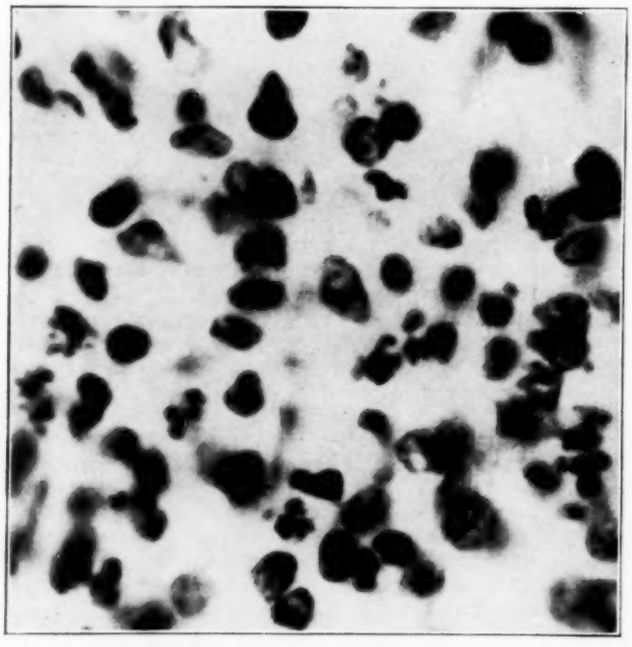

Fig. 2.—Section of the spleen viewed in oil immersion. There are many neutrophils present which appear to be undergoing a peculiar degenerative change. This is characterized by a dispersion of the chromatin material into many small, irregular masses.

Microscopic examination of the spleen revealed advanced congestion and moderate proliferation of the cells lining the sinusoids. These cells were in frequent mitosis. The malpighian corpuscles were large and prominent and occasionally showed accumulations of large, pale cells in their central portions.

The most striking feature was the presence of large numbers of neutrophils in the splenic pulp which were irregularly distributed and tended to be collected in focal accumulations. These averaged about the size of a high power field. In many of the high power fields more than half of the cells present were neutrophils. In some instances the neutrophils appeared

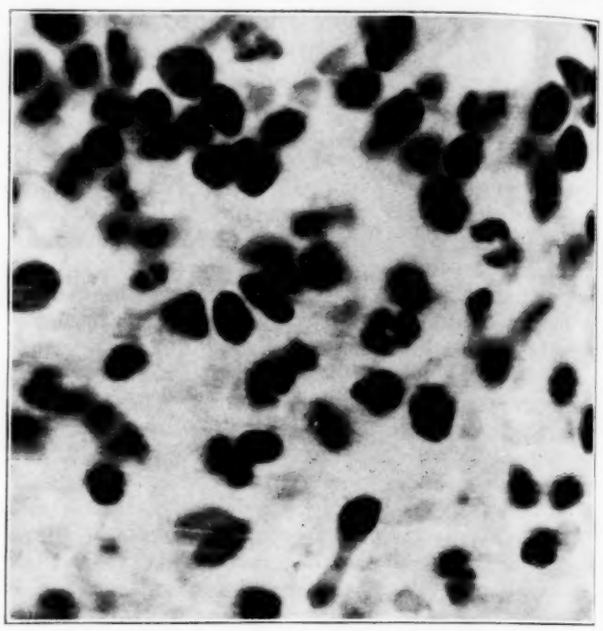

Fig. 3.—Section of spleen viewed in oil immersion. The neutrophils present appear to be well preserved and of the adult type. Many have from five to eight lobulations.

well preserved and of the adult type, having from five to eight lobulations in the nuclei (fig. 3). In other areas the neutrophils appeared to be undergoing a peculiar type of degenerative change characterized by dispersion of the nuclear chromatin into small irregular masses (fig. 2). In such cells the nuclei frequently appeared to have from fifteen to eighteen lobulations and the cytoplasm appeared to be degenerating or completely absent. There was a striking absence of eosinophils, young neutrophils and myelocytes. There was also a striking absence of any evidence of phagocytosis of the degenerating neutrophils, in contrast to the picture described in previously reported cases.

Our patient has now survived for fourteen months and has had blood cell counts done at intervals of two weeks. During this period there has been a slight fluctuation in the total leukocyte count, but the ratio of mononuclear cells to polymorphonuclear cells has remained normal. The patient has gained weight and has returned to full time work, something which she had been unable to accomplish for the preceding five years.

We feel that this syndrome, previously described by Wiseman and Doan, as well as by Moore, represents a distinct clinical entity with a rational therapeutic approach.

The diagnosis of this condition seems to rest on the presence of a hyperplastic or normal bone marrow with an abnormal diminution of granulocytes in the peripheral blood. The tendency to spontaneous remission is worthy of emphasis.

It must be carefully differentiated from other granulocytopenic states which will not be benefited by splenectomy. Careful study of the bone marrow and the peripheral blood should make the differential diagnosis relatively simple.

COMMENT

In many respects our knowledge of splenic physiology is still elemental. It is known, however, that one function is the destruction of granulocytes whose span

of activity has been served. The syndrome of acute agranulocytosis caused by excessive lysis of neutrophils is characterized by a great disparity between the number of neutrophils in the spleen and that in the peripheral circulation. This may logically be explained by postulating either that there is hyperfunction of the spleen in phagocytizing essentially normal neutrophils or that some error in development of the granulocytes exists and that as a result they are selectively removed by the spleen. The latter condition might be compared to congenital hemolytic icterus in which the more fragile red blood cells are phagocytized in excessive numbers.

The clinical symptoms of pain and fever appear unique and have not been stressed in previous reports of this syndrome. Fever might well arise as the result of cellular destruction. There was a rough correlation between the height of the fever and the degree of the granulocytopenia. Pain might arise as the result of tension within the spleen and pressure on adjacent structures. That this might have occurred on previous occasions is suggested by the number and density of the perisplenic adhesions noted at the time of operation.

3720 Washington Boulevard.

Clinical Notes, Suggestions and New Instruments

STOMATITIS VENENATA AND DERMATITIS OF THE ANAL ORIFICE FROM CHEWING POISON IVY LEAVES (RHUS TOXICODENDRON)

SEYMOUR H. SILVERS, M.D., BROOKLYN

The mucous membranes are thought to be less sensitive than the skin to eczematogenous allergens. The skin is often found extremely sensitive to minute doses of a particular allergen while the mucous membrane of the same person remains unaffected by the identical allergen. This fact is responsible for the recent attempts to desensitize sufferers from eruptions caused by poison ivy by giving them drops of the tincture or extract of poison ivy leaves or asking them to chew the leaves. The reason for this profound difference in sensitivity of the skin and mucous membranes is not known. Nor is this difference as common as it is thought to be by many. There are persons whose skin and mucous membranes are equally sensitive to an allergen. A patient demonstrating this dual sensitivity came under my care recently. The following case is an illustration of the fact that the giving of poison ivy preparations by mouth or suggesting the chewing of leaves to a patient may not always be innocuous.

REPORT OF CASE

K. H., a married woman aged 38, consulted me on July 7, 1940 for an intensely pruritic eruption of the face, lips and adjacent areas around the mouth and of the anal region. She had been unable to eat properly for the past two days because of pain involving her tongue and cheeks. For the past seven years she had had cutaneous eruptions from exposure to poison ivy plants. During the summer of 1939 she received injections to prevent these eruptions. These injections did not prevent or diminish an ensuing attack. At the time she received the injections she was told that chewing poison ivy leaves would help prevent these cutaneous outbreaks. The statement was repeated by many of her lay friends, who sympathized with her and suggested the chewing of leaves as a means of preventing the eruptions.

The patient visited the country during the week end of July 4, 1940 and while there thoroughly chewed two leaves of poison ivy (Rhus toxicodendron) which she picked with her hand. Two days later her mouth became sore, the lips became swollen and an eruption appeared on the skin about the mouth and on the hands. During the next few days the soreness of the mouth became worse and extended deep into the pharynx. Eating solids and even semisolids became difficult because of the swelling and pain attending movements of the cheeks and tongue. Two days after the oral soreness was noticed the anal region became sore and itchy. Defecation was painful.

The patient was well developed physically. Examination showed swollen lips and an eruption surrounding the lips. She was in distress because of the pain experienced in trying to move the lips and mouth when talking. Radiating from the lips and decreasing in intensity there were scattered, ill defined, pinhead to lentil size vesicles and some red papules. The skin was somewhat swollen. The lips were swollen and cracked, showing superficial, crusted fissures. Fetor oris was strong. The mucous membrane of the tongue, cheeks, palate and pharynx was tender, grayish and edematous with an irregular surface. The anal area was red, swollen and extremely tender. The redness and edema extended ½ to 1 inch (1.2 to 2.5 cm.) from the anal orifice. The dorsum of the hands showed a few scattered pink and skin-colored vesicles which caused no subjective symptoms.

Burow's solution ointment was applied three times daily to the lips, face, hands and anal region. The mouth was rinsed every two hours with a 0.125 per cent solution of zinc chloride. After three days, the oral lesions cleared sufficiently to enable the patient to eat semisolid foods without experiencing pain. The lesions of the hands, lips and face were much improved. The itching, pain and redness of the anal region persisted the longest.

Loveman [1] reported a case of stomatitis venenata due to oil of anise used in a cream to clean dentures. A positive reaction to a patch test showed that the skin, too, was sensitive to this oil. I [2] reported a case of stomatitis and dermatitis venenata, of the mucous membrane of the mouth and the skin around the mouth and lips, due to the oils of cloves and cassia present in a tablet used by dentists to clean the teeth. In addition to the usual redness and vesiculation, my patient showed purpuric macules in the affected areas of the skin and mucous membranes. Shelmire [3] in his studies of contact dermatitis from weeds made a number of interesting observations. He concluded that sensitivity to plants is apparently general, affecting both the skin and the mucous membranes and that the dermatitis-producing principle of poison ivy is a dialyzable fraction of the oleoresin soluble in both water and urine. Shelmire found pruritus ani et vulvae and gastric disturbances among the 28 ivy-sensitive persons to whom he gave large doses of ivy oleoresins by mouth. The urethral orifices and surrounding areas of the female subjects who complained of pruritus ani et vulvae showed an intense erythema. After the patient had ingested a known quantity of oleoresin in corn oil and the urine and feces were collected for three days, Shelmire found that 30 per cent of the ingested oleoresin was excreted in the urine and the remainder was eliminated in the feces.

SUMMARY

A woman with a known sensitivity to poison ivy (Rhus toxicodendron) chewed the leaves on the advice of a physician and of friends. She incurred a severe eruption of the mucous membranes of the mouth and anal orifice in addition to dermatitis of the face, lips, hands and anal region. Apparently the allergens traversed the gastrointestinal tract unchanged. The patient did not complain of any gastrointestinal symptoms, although it is possible that the mucosa was also affected by the poison ivy allergen.

CONCLUSIONS

1. Stomatitis venenata and dermatitis of the anal orifice can result from the chewing of poison ivy leaves.

2. While it is possible to use the oral route for attempted desensitization, it is unwise to suggest the chewing of poison ivy leaves, for the dosage cannot be controlled by this method and untoward reactions may result.

920 Bushwick Avenue.

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OCCUPATIONAL DERMATITIS DUE TO PARACHLORMETACRESOL

W. H. GUY, M.D., AND F. M. JACOB, M.D., PITTSBURGH

We have observed 12 cases of vesicular dermatitis involving mostly the palm of the left hand of girls employed in labeling and capping whisky bottles. Two kinds of glue, lacquered labels and viscos caps were handled. Patch tests with glue, lacquered labels and washed viscos caps gave negative results. However, the fluid in which the viscos caps were shipped to the distillery produced positive reactions in all cases. The girls held several of the viscos caps wet with the preservative shipping fluid in the palm of the left hand preparatory to capping bottles. The dermatitis ensued in varying lengths of time in different persons and involved to a less extent the right hand and the dorsal surfaces of both hands. The shipping fluid was reported to contain 1 to 1.5 per cent of parachlormetacresol. After repeated attempts to obtain the chemical from the logical sources without avail we obtained parachlormetacresol from Dr. Louis Schwartz of the United States Public Health Service.

Patch tests with a 1.5 per cent aqueous solution of parachlormetacresol gave slightly positive results after twenty-four hours on the upper arm. A patch test on the palm of the left hand of one of us (W. H. G.) with a 1.5 per cent solution of parachlormetacresol produced a pruritic, vesicular dermatitis in four hours which persisted for one week. Washing the viscos caps in water before handling prevented the appearance of new cases.

7026 Jenkins Arcade.

A SIMPLE HEMOGLOBIN-RED BLOOD CELL RATIO TO REPLACE THE COLOR INDEX

RAPHAEL ISAACS, M.D., CHICAGO

The color index, taken as the ratio of the percentage of hemoglobin (compared to "normal") to the red blood cell count (compared to "normal") has been a useful clinical figure in differentiating iron deficiency from other types of anemia. However, the lack of single "normal" figures for the percentage of hemoglobin and red blood cell counts, as well as the differences in males and females, has always made the number somewhat arbitrary. With the advent of hemoglobinometers in which 100 per cent corresponds to 13.5, 14, 15.6 or 17 Gm., the problem is further complicated by the difference in readings of the percentages. These would give the same person different percentages on the different instruments. The same person could have a "normal" color index with one instrument, a high index with another and a low index with a third.

To avoid these discrepancies and still obtain a figure which would represent the same concept as the color index, the ratio of the number of grams of hemoglobin, multiplied by 3, to the red blood cell count, in hundred thousands per cubic millimeter, has been found useful. The formula is purely empiric and arbitrary, but it has been found that in normal blood 3 times the number of grams of hemoglobin gives a number which is approximately the same as the number of red blood cells in hundred thousands per cubic millimeter. When the number of grams multiplied by 3 is less than the figure for the red blood cells there is an iron deficiency, and when the number is greater the cells are "hyperchromic." As an example, if the number of grams of hemoglobin is 9.3 and the red blood cell count is 2,800,000 per cubic millimeter, the resulting ratio would be $\frac{27.9}{28.0}$, or practically 1. If, in this example, the number of grams of hemoglobin had been 7 the ratio would have been $\frac{21}{28}$, indicating an iron deficiency.

The advantage of this ratio is that comparisons to "normals" (which do not exist) are eliminated, and the figures used are obtained by direct observation. No different standard is needed for men and for women.

SUMMARY

A simple relationship between the hemoglobin content of the blood and the number of red blood cells may be expressed by this formula for "normal": Three times the number of grams of hemoglobin per hundred cubic centimeters divided by the number of hundreds of thousands of red blood cells per cubic millimeter equals 1. It is distinctly less than 1 in hypochromic anemias and more than 1 in hyperchromic conditions.

104 South Michigan Avenue.

From the Department of Hematology, Michael Reese Hospital.

THE TYPHOID CARRIER STATE TREATED WITH SULFAGUANIDINE

J. ELLIOT LEVI, M.D., AND ABNER WILLEN, M.D.
BALTIMORE

Reports by Marshall and his associates[1] on the treatment of acute bacillary dysentery and other intestinal infections suggested the use of sulfaguanidine (sulfanilylguanidine) in the typhoid carrier state.

REPORT OF CASE

W. M., a white man aged 38, a chef, was discharged from this hospital on Aug. 15, 1940 after a seven weeks confinement for typhoid. The diagnosis was confirmed by cultures of the blood, urine and stools as well as by the Widal reaction. After discharge, cultures of the stools remained persistently positive for Eberthella typhi. Cultures of the urine and blood were negative for the organism. The patient was readmitted October 13. Cultures of the bile and stools were still positive. The Graham-Cole test revealed poor filling of the gallbladder. On October 27 the patient was started on the therapeutic administration of soluble iodophthalein according to the method of Saphir and Howell.[2] He was kept on this regimen for one month, and the stools continued to show E. typhi. The patient was again admitted on December 10, and a cholecystectomy and appendectomy were performed two days later. Cultures of material from the gallbladder and the appendix, taken at operation, were positive for E. typhi. After operation, cultures of the stools showed the organism on December 18, 19 and 21, were sterile on December 26 and 28 and again showed E. typhi on December 30 and on Jan. 10, 1941. Beginning on January 10, sulfaguanidine was administered for one week (0.05 Gm. per kilogram of body weight every eight hours). Studies on the blood and urine were made during this period, but no evidence was observed of complications associated with the administration of the drug. Cultures of the stools taken on January 19, 20, 21, 23 (two cultures), 25 and 26 were negative for E. typhi. Cultures taken on February 7, 12 and 17 after the use of magnesium sulfate as a cathartic have all been reported negative for E. typhi by the Maryland Department of Health.

COMMENT

According to the data of Coller and Forsbeck,[3] Whipple[4] and Bigelow and Anderson[5] in their combined series of 44 cases of the typhoid carrier state in which cure was effected by cholecystectomy, cultures of the stools became negative within three weeks after operation if cure was ultimately obtained. In this series there was 1 exception in which the bile was found positive for E. typhi eighteen months and permanently negative twenty-six months after operation.

In the present case four weeks after operation the stool was still positive for E. typhi at the time sulfaguanidine was administered. The time elapsing since discontinuance of the drug has been brief, but on no occasion have the stools shown the presence of E. typhi. It is felt that this method of therapy is worthy of further trial.

Monument Street and Rutland Avenue.

From the Medical Service of the Sinai Hospital.
Drs. C. R. Austrian and E. K. Marshall Jr., gave helpful advice.
The sulfaguanidine used in this study was supplied by Dr. E. K. Marshall Jr. through E. R. Squibb & Sons.

1. Marshall, E. K., Jr.; Bratton, A. C.; Edwards, L. B., and Walker, E.: Sulfanilylguanidine in the Treatment of Acute Bacillary Dysentery in Children, Bull. Johns Hopkins Hosp. **68:** 94 (Jan.) 1941. Marshall, E. K., Jr.; Bratton, A. C.; White, H. J., and Litchfield, J. T., Jr.: Sulfanilylguanidine: A Chemotherapeutic Agent for Intestinal Infections, ibid. **67:** 163 (Sept.) 1940.
2. Saphir, W., and Howell, K. M.: Soluble Iodophthalein in Treatment of Carriers of Typhoid-Paratyphoid Group, J. A. M. A. **114:** 1988 (May 18) 1940.
3. Coller, F. A., and Forsbeck, F. C.: The Surgical Treatment of Chronic Biliary Typhoid Carriers, Ann. Surg. **105:** 791 (May) 1937.
4. Whipple, A. O.: The Surgical Treatment of Bile Typhoid Carriers, Ann. Surg. **90:** 631 (Oct.) 1929.
5. Bigelow, G. H., and Anderson, G. W.: Cure of Typhoid Carriers, J. A. M. A. **101:** 348 (July 29) 1933.

Special Article

SULFATHIAZOLE-WINTHROP CONTAMINATED WITH PHENOBARBITAL

I. INTRODUCTION

MORRIS FISHBEIN, M.D., CHICAGO

On March 26, 1941 the headquarters office of the American Medical Association received a report calling attention to the contamination with phenobarbital of certain lots of sulfathiazole, manufactured by the Winthrop Chemical Company. Immediately, steps were taken to ascertain the seriousness of the situation. As soon as definite evidence was available, on March 28, a general warning was issued to the press and over the radio by the American Medical Association. This was the first public warning against this hazard. Conforming to the policy of THE JOURNAL and of the Council on Pharmacy and Chemistry to supply information to the medical profession, THE JOURNAL published additional statements [1] to warn of the potential dangers associated with the use of the contaminated material.

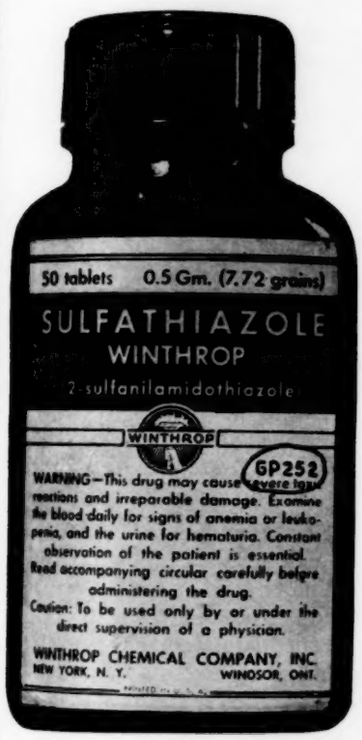
50 tablets 0.5 Gm. (7.72 grains)
SULFATHIAZOLE
WINTHROP
2-sulfanilamidothiazole
WINTHROP
GP252
WARNING—This drug may cause severe toxic reactions and irreparable damage. Examine the blood daily for signs of anemia or leukopenia, and the urine for hematuria. Constant observation of the patient is essential. Read accompanying circular carefully before administering the drug.
Caution: To be used only by or under the direct supervision of a physician.
WINTHROP CHEMICAL COMPANY, INC.
NEW YORK, N. Y. WINDSOR, ONT.

Fig. 1.—Label for sulfathiazole-Winthrop, lot GP 252. This particular lot was satisfactory. The grossly contaminated tablets were in bottles marked with the lot number MP 029.

Available evidence indicates that the first report suggesting unusual reactions following the use of sulfathiazole - Winthrop originated in Louisville, Ky., late in December 1940. Although the manufacturers began at once their efforts to recall the tablets, the Food and Drug Administration apparently did not receive pertinent information until March 20; this resulted from a report originating in Boston. Immediately thereafter government inspectors were sent throughout the nation to secure all of the contaminated sulfathiazole still in circulation.

As soon as the office of the Council on Pharmacy and Chemistry received reports of the unusual reactions which were occurring following prescription of the remedy, telegrams were sent to physicians requesting details. Replies received at the Council office revealed indicative information which, when followed, resulted in the securing of data on other cases not originally reported to the headquarters office. (Assistance from Mr. J. O. Clarke, Chief of the central division of the Food and Drug Administration, has been of inestimable value to the office of the Council on Pharmacy and Chemistry and the Chemical Laboratory of the American Medical Association in the study of this unfortunate incident.) Detailed information now has been received from members of the medical profession about 56 patients. This evidence indicates that at least 47 patients presented symptoms compatible with those observed after the administration of a therapeutic dose or of an overdose of phenobarbital but have made full recovery as far as this office is aware. Histories indicate that 9 of the 56 patients received tablets from the contaminated lots of sulfathiazole and subsequently died. Convincing evidence is not available at this time to indicate clearly the causal relationship between the drug and the deaths that followed in time.[1a]

Apparently only one batch of the sulfathiazole-Winthrop was heavily contaminated with phenobarbital, this being MP 029. The illustration of the label of Sulfathiazole-Winthrop (fig. 1) shows the method used by this firm in identifying different lots. In this instance the letters GP 252 have been circled by the photographer. This lot of sulfathiazole was satisfactory; the heavily contaminated tablets were marked MP 029. Others which were believed to be contaminated were marked MP 051, MP 076 and MP 118.

In the following articles Dr. A. E. Smith of the office of the Council on Pharmacy and Chemistry has described the symptoms observed in this unusual incident, and Drs. A. E. Sidwell Jr. and A. R. Menotti of the American Medical Association Chemical Laboratory have reported their study of the chemical examination of the contaminated material.

II. CLINICAL ASPECTS

AUSTIN E. SMITH, M.D., CHICAGO

SULFATHIAZOLE

At the request of the Council on Pharmacy and Chemistry, Dr. Perrin H. Long prepared a preliminary report [2] on the thiazole derivatives of sulfanilamide so that the medical profession might be informed about these new drugs. The report was published in THE JOURNAL before sulfathiazole was released for interstate commerce as a new drug under the Food, Drug and Cosmetic Act. This preliminary report was followed by a statement [3] in THE JOURNAL informing the medical profession that certain brands of sulfathiazole had been accepted as conforming to the rules of the Council on Pharmacy and Chemistry for admission to New and Nonofficial Remedies.

In the description of the drug which appears in this Council communication, the toxicity, indications for use and suggested dosage are described. Clinically, the drug has been used primarily in the treatment of pneumococcic pneumonia, infections due to Staphylococcus aureus or Escherichia coli, and in the treatment of gonorrhea in the male; its use in other infections is undergoing extensive investigations.

The toxic manifestations which have been reported following sulfathiazole therapy necessitate daily atten-

From the office of the Council on Pharmacy and Chemistry, American Medical Association, Chicago.

1a. In all fairness, it should be noted that a coroner's jury of six physicians determined that the death of 1 patient could bear no relation to the possible ingestion of phenobarbital.

1. Sulfathiazole Contaminated with Phenobarbital—A Warning, Current Comment, J. A. M. A. **116:** 1527 (April 5) 1941; Sulfathiazole Contaminated with Phenobarbital, ibid. **116:** 1648 (April 12) 1941.

2. Long, Perrin H.: Thiazole Derivatives of Sulfanilamide: Sulfamethylthiazole, J. A. M. A. **114:** 870 (March 9) 1940.

3. Sulfathiazole, New and Nonofficial Remedies, J. A. M. A. **116:** 308 (Jan. 25) 1941.

dance by the physician and are similar to those observed in sulfanilamide or sulfapyridine therapy, with the exception that the former drug causes less nausea, vomiting and dizziness than does sulfapyridine. Mental disturbances or psychoses are uncommon, but when they are present it is best to stop administration of the drug and force fluids.[4] Drug fever is fairly common and may occur at any period but it is usually seen between the fifth and ninth days of treatment. The Council report [3] asserts that as far as is now known sulfathiazole can be used concurrently with any other drugs with the possible exception of magnesium sulfate or other saline laxatives. However, more recently Long [4] stated that there were no contraindications to the concurrent use of other necessary drugs with the possible exception of anesthetic doses of certain barbiturates, but he enlarges his statement by acknowledging that it has been shown that patients who have been receiving sulfanilamide or sulfapyridine "apparently suffer no ill effects from the administration of such anesthetics as sodium pentothal." Dizziness following the use of sulfathiazole is uncommon, and Goodman and Gilman [5] point out that psychoses or delirium has been reported by several investigators, although central nervous system phenomena are uncommon; Finland and his co-workers observed psychoses in 3 patients in a series of 165, the fever having previously subsided, and Abernathy reported that 4 patients had delirium in a series of 35.

PHENOBARBITAL

The standards for phenobarbital are described in the United States Pharmacopeia, the actions and uses in New and Nonofficial Remedies.[6] Complete statements on the pharmacology and clinical use of barbituric acid derivatives are well described in a number of textbooks on pharmacology and therapeutics. As is well known, the barbiturates can be used to obtain depression of the central nervous system ranging from slight sedation to deep coma and death. It is sometimes forgotten that these drugs are not analgesics and may not produce sedation if there is present pain which is severe or uncontrolled; in fact, it has been stated [5] that delirium may follow when used alone in the presence of pain. Emotional disturbances are not infrequent and may be especially prominent in patients showing idiosyncrasy. Sollmann [7] states that some patients show excitement rather than depression and give the appearance of inebriation.

Recently there have been renewed studies in the physiology of the shock sometimes observed following an overdosage of a barbiturate. When administered intravenously, large doses depress the central vasomotor center, and peripheral vasodilatation and hypotension may follow.[5] Again, dilatation of the smaller blood vessels may occur as the result of a direct effect on the musculature; if the capillary beds are dilated and injured, shock may ensue. These authors [5] claim that the fall in blood pressure after oral ingestion is largely due to the anoxia which results from the decreased pulmonary ventilation, respiration being affected early in acute poisoning. Shallow respiration together with hypotension are favorable to the onset of hypostatic pneumonia, although pulmonary edema or hypostatic pneumonia may result solely from direct depression of the respiratory center.[5]

The most prominent symptoms associated with overdosage of the barbiturates are drowsiness, deep sleep, coma and death if the amount ingested is of sufficient quantity. These may be the only symptoms or they may be preceded by a period of dizziness, excitement or delirium; if recovery ensues, it is not uncommon to observe restlessness, irrationality or excessive activity. It has been stated [5] that barbiturate poisoning usually occurs when an amount has been ingested which is equivalent to from five to ten times the full hypnotic dose; when fifteen times the hypnotic dose has been absorbed, it is usually difficult to save the life of the patient.

The contraindications to the use of the barbiturates have been the subject of discussion on many occasions and are in general familiar to the medical profession. However, a recent statement [5] succinctly warns of interesting potential dangers: "Untoward responses attributable to the barbiturates are particularly likely to occur in patients with fever, hyperthyroidism, diabetes mellitus, severe anemia and congestive heart failure."

CASES REPORTED TO BE ASSOCIATED WITH THE PHENOBARBITAL-CONTAMINATED SULFATHIAZOLE

According to the report of the Chemical Laboratory of the American Medical Association, a considerable number of tablets of Sulfathiazole-Winthrop (MP 029) contained approximately 60 per cent (from 330 to 350 mg. of phenobarbital to each tablet) of phenobarbital and negligible amounts of sulfathiazole. Some of the tablets in the other MP series contained traces of phenobarbital (from 5 to 15 mg.) and full amounts of sulfathiazole.

From the clinical point of view there are two important factors to consider in the evaluation of those cases in which heavily contaminated tablets were purported to have been administered. First, the patient was not receiving sulfathiazole in adequate amounts; second, by unknowingly administering such excessive doses of a barbiturate in the pneumonia cases, the physician was adding "insult to injury" by giving a marked respiratory depressant for a condition which was already taxing the respiration. Information forwarded by members of the medical profession indicates that at least 56 patients could have received the contaminated tablets. The total number conceivably may increase, as letters are continuing to arrive at the Council office.

From one physician it was learned that 8 patients became narcosed after receiving some of the tablets; fortunately all eventually recovered on discontinuance of the drug. Another telegraphed: "Pneumonia patient became drowsy and more or less comatose after administration of usual dose of sulfathiazole. Some hours after discontinuance of drug patient regained consciousness. Recovered from pneumonia." From still another source it was reported that a pneumonia patient received four of the tablets and became semicomatose within thirty minutes but was given two more tablets without consultation of the attending physician. On observing the condition of the patient six hours after the initial administration of the drug, the patient was taken to the hospital; the case terminated within ten days in death. A second pneumonia patient received the same amount of

4. Long, Perrin H.: The Clinical Use of Sulfanilamide, Sulfapyridine, Sulfathiazole, Sulfaguanidine and Sulfadiazine in the Prophylaxis and Treatment of Infections, Canad. M. A. J. **44**: 217 (March) 1941.

5. Goodman, Louis, and Gilman, Alfred: The Pharmacological Basis of Therapeutics, New York, Macmillan Company, 1941.

6. New and Nonofficial Remedies, 1940.

7. Sollmann, Torald: A Manual of Pharmacology, Philadelphia, W. B. Saunders Company, 1936.

drug but recovered after lying in a semiconscious state for five days. Three other cases of complete collapse have been reported, with recovery in all.

Other physicians observed a period of "deep sleep" for four hours in a child of 6 years, continuous "sleep" for forty-eight hours in a male being treated for gonorrhea, profound "sleep" in a boy of 9 years after receiving a second tablet, and coma following the administration of 15 grains (1 Gm.) with recovery in two days but a similar reaction for seven hours when 7½ grains (0.5 Gm.) was administered two weeks later. These reports, together with other statements received at the Council office, indicate that drowsiness, stupor and coma were predominant. However, other symptoms commonly found in patients who have received excessive doses of a barbiturate were frequently noticed.

A woman of 78 years became disoriented, drowsy and complained of diplopia after receiving four tablets given in four doses at four hour intervals. A man after ingesting 60 grains (4 Gm.) over a period of twelve hours had to be relieved of his duties at work and on his way home was unable to distinguish on which side of the road were the people he saw on the highway. A number of patients receiving treatment in a venereal disease clinic complained of "dizziness and intoxication as if from alcohol." Severe reactions were obtained even with moderate doses. A baby of 19 months died thirty-six hours after receiving 2 grains (0.13 Gm.) of the drug; at the inquest a jury of six physicians determined the cause of death to be pneumonia. An elderly woman suffering from pneumonia was sent to a hospital in coma and showing anuria; another had incoherent speech, incoordination and emotional instability.

A physician, reporting 4 cases, mentioned a boy of 13 years who became dizzy, disorientated, hyperexcitable and irritable to the slightest stimulus within twenty minutes after ingesting 2 Gm. of the contaminated sulfathiazole tablets. Over a period of a week in the hospital the delirium lessened with the aid of sedation, although the patient occasionally became excitable and noisy. Significantly enough, the temperature suddenly rose to 104 F. and remained in that neighborhood for several days after being normal for a week. At the same time an extensive maculopapular eruption appeared. Eventually the patient recovered and was discharged from the hospital. A second patient suddenly collapsed after taking sulfathiazole from the contaminated lot of tablets. On examination he was cyanotic and showed Cheyne-Stokes respiration, and the pulse was imperceptible. After stimulants had been administered the patient recovered but remained weak and fatigued. A subsequent course of therapy with sulfapyridine produced no similar reactions. The third patient, also with pneumonia, became drowsy and unable to speak clearly after the ingestion of 30 grains (2 Gm.); several days passed before the speech defect and mental dulness disappeared. The fourth patient, a child of 3½ years, became drowsy and passed into deep coma thirty minutes after she had received 15 grains (1 Gm.) of the material. After several days this patient also recovered. All patients complained of severe headache while recovering. The apathy, mental confusion, delirium and disorientation in some instances led physicians to question whether the patients might have encephalitis. In three cases the reports of examination of spinal fluid were negative, however.

One of the deaths reported occurred within twelve hours after the administration of sulfathiazole from the contaminated lot of tablets to a patient with pneumonia and neurosyphilis. Two deaths reported by one physician dealt with a man aged 74 with bronchial pneumonia and myocarditis and a man with a streptococcic infection of the throat. The former "went to sleep and never woke up," the latter was shown to have a streptococcic bacteremia. Another death, as reported by the physician, occurred in an elderly woman with pneumonia and marked emaciation; the physician did not consider that medication may have contributed to the death. Four other cases terminating in death included a man with acute retention and a possible brain abscess, who was moribund when the drug was administered; a man with progressive congestive heart failure, syphilitic cardiovascular disease and terminal pneumonitis, who was restless and slept at short intervals but showed no evidence of coma or stupor; and 2 surgical cases in which, according to the attending physician, signs of stupor were not evident up to the time of death.

COMMENT AND SUMMARY

All of the 52 patients reported to have received the contaminated Sulfathiazole-Winthrop, but who recovered, presented some of the signs and symptoms similar to those observed in patients under the influence of therapeutic or excessive doses of a barbiturate. These symptoms included drowsiness, stupor, coma, restlessness, irrationality and delirium, eye disturbances, decreased rate and depth of respiration, and hypotension accompanied by signs of shock or collapse. None of these reactions are commonly noticed during sulfathiazole therapy. It has been stated that reactions are particularly liable to occur in patients with fever, diabetes mellitus or congestive heart failure; significantly enough, histories of some of the patients indicated that they were suffering from fever, diabetes mellitus and congestive heart failure.

While sufficient evidence is not at hand to establish definitely a causal relationship between the ingestion of the drug and the reported deaths, sufficient evidence exists in the statements forwarded to the Council office to indicate that the contaminated tablets may have contributed to the deaths in some cases. The amount of phenobarbital which any patient may have received is difficult to estimate accurately, as some of the sulfathiazole tablets were contaminated whereas others were comparatively free of contamination. It may be noted, however, that the ingestion of only one of the heavily contaminated tablets could provide the patient with 5 grains of phenobarbital. Fortunately many recovered after presenting evidence of severe reactions.

REPORT OF CHEMICAL EXAMINATION OF SULFATHIAZOLE-WINTHROP, CONTAMINATED WITH PHENOBARBITAL

A. E. SIDWELL JR., PH.D., AND A. R. MENOTTI, PH.D.
CHICAGO

To obtain information about the nature and extent of contamination with phenobarbital of certain specimens of tablets sulfathiazole-Winthrop, it was considered desirable to subject some of the tablets to chemical examination. Through the courtesy of the Winthrop Chemical Company, Inc., a number of samples

From the Chemical Laboratory, American Medical Association, Chicago.

were obtained from the specific lots of tablets, MP series, in which contamination was believed to have occurred. Samples were provided from every container in which these tablets were stored in the factory under "quarantine." In addition, two samples of the tablets from lot MP 029 were obtained from the Food and Drug Administration. A method of examining these tablets to detect and determine phenobarbital was devised, and the results of the examination are here reported. For comparison, specimens of sulfathiazole-Winthrop from lots known to be uncontaminated, and a specimen of tablets of luminal-Winthrop, a brand of phenobarbital, were examined concurrently.

Sulfathiazole-Winthrop is marketed in the form of tablets containing 0.25 Gm. and 0.5 Gm. of that substance. For the purpose of tableting, sulfathiazole is mixed with an excipient consisting essentially of cornstarch. Small amounts of stearic acid and talc are added to obtain desirable physical properties. The finished tablets have the form of short cylindric rods

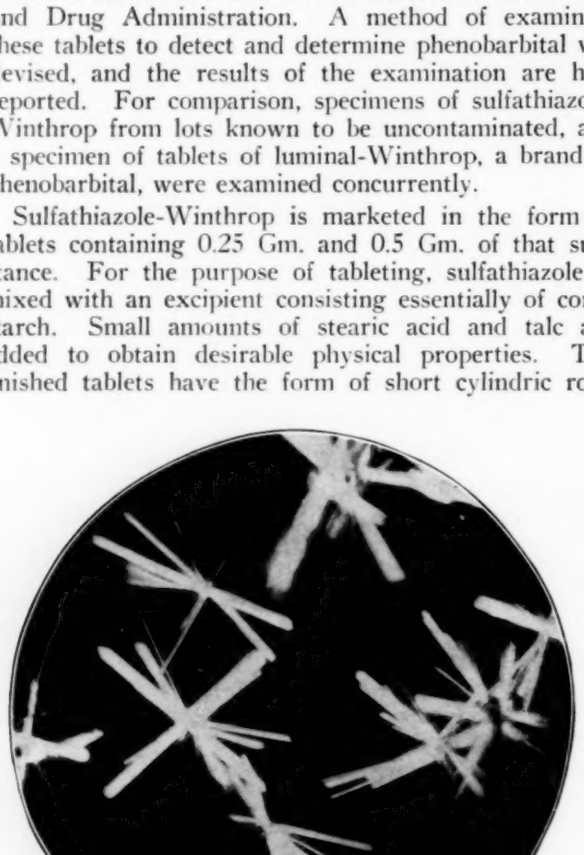

Fig. 2.—Crystals of phenobarbital as seen with the polarizing microscope.

with convex ends which form the tablet faces. Each of the 0.5 Gm. tablets is about 10.5 mm. in diameter and 6.5 mm. in length through the center of the faces. The tablets bear an impressed W on one face. The reverse face is scored to facilitate division into halves and one eighth of a tablet.

EXAMINATION OF UNCONTAMINATED TABLETS

Chemical examination of a number of uncontaminated tablets of sulfathiazole-Winthrop of the MP series yielded results provided in table 1. There also are listed in the table data obtained on chemical examination of tablets of sulfathiazole-Winthrop from lots identified as GP 252 and BR 252. The tablets from lot GP 252 were said to have been manufactured prior to those of the MP series, and tablets of BR 252 were manufactured later. Lot GP 252 was the source of samples originally submitted by the company to the Council on Pharmacy and Chemistry. The composition of these tablets having been found satisfactory and the other requirements of the rules of the Council having been met, sulfathiazole-Winthrop was declared accepted for inclusion in New and Nonofficial Remedies.[3] Except for an increased amount of ash, presumably from the addition of talc, there is no essential difference in composition of these tablets manufactured at different times. The active ingredient in each amounted to about 84 per cent of the total weight. The average weight for each tablet was determined by weighing from twenty

TABLE 1.—*Analysis of Tablets of Sulfathiazole-Winthrop*

	Uncontaminated		
	Lot GP 252	MP Series	Lot BR 252
Average weight	0.603 Gm.	0.597 Gm.	0.605 Gm.
Sulfathiazole content	83.9 per cent	83.7 per cent	84.0 per cent
Stearic acid content	1.7 per cent	1.4 per cent	0.6 per cent
Other excipients by difference (starch, talc)	14.4 per cent	14.9 per cent	15.4 per cent
Ash	0.05 per cent	2.2 per cent	2.0 per cent

to thirty tablets. Sulfathiazole was determined by the method described in New and Nonofficial Remedies in the section dealing with that substance.[3] Stearic acid was extracted completely with petroleum ether of low boiling point and weighed after removal of the solvent. It was identified by its melting point and neutral equivalent. The starch present was identified as cornstarch by microscopic comparison with known specimens. Talc, when present, was identified by the appearance of the ash.

EXAMINATION OF CONTAMINATED TABLETS

Method.—Each tablet was analyzed separately. After some preliminary tests the following procedure was found to be satisfactory for the detection of phenobarbital in mixtures containing sulfathiazole, cornstarch, stearic acid and other excipients present in the tablet:

TABLE 2.—*Results of Examination of Tablets Sulfathiazole-Winthrop for Phenobarbital Contamination*

Laboratory Identification No.	Manufacturer's Code No.	Number of Tablets Examined	Number of Tablets Found to Contain Phenobarbital	Amount of Phenobarbital Found per Tablet	Amount of Phenobarbital Found, per Cent
1	MP 029	100	10	0.350 Gm.	58.7
2		12	11	0.345 Gm.	59.3
3	MP 029	72	7	0.334 Gm.	58.2
4		80	1		
5		83	0		
6		85	0		
7	MP 051	20	0		
8		20	3	0.005 Gm. (upper limit)	
9	MP 076	10	0		
10		10	0		
11		10	0		
12		10	0		
13		10	0		
14		10	0		
15		10	0		
16		10	0		
17	MP 118	15	8	0.0075 Gm. (upper limit)	
18		15	0		
19		14	2	0.015 Gm. (upper limit)	
20	Physically	10	0		
21	imperfect tablets	10	0		

A single tablet is placed in a 50 cc. beaker containing approximately 10 cc. of freshly distilled, residue-free ether. The tablet is crushed to a powder; the mixture is stirred and then allowed to stand for about five minutes. The ether solution is decanted into another 50 cc. beaker and evaporated to dryness on a steam bath, after which the residue is cooled

and examined. Stearic acid appears as a slight film, with perhaps some crystalline structure apparent in the residue from the ether extract. Considerable amounts of crystalline residue indicate the presence of phenobarbital, which may be identified by its crystalline structure, melting point and other characteristics.

To detect traces of phenobarbital, small residues from the ether extracts are examined under a polarizing microscope fitted with a heating stage. The contents of the beaker are brought to a temperature above the melting point of stearic acid and below that of phenobarbital. This procedure obviates any possibility of interference of stearic acid with the appearance of phenobarbital. By this means the presence of small amounts of phenobarbital is indicated by characteristic crystals such as those illustrated in figure 2. The phenobarbital may be further identified by various means.

The melting point of crystals of phenobarbital, isolated from contaminated tablets, was found to be 172 to 175 C. Control experiments on uncontaminated tablets to which were added varying amounts of phenobarbital showed that as little as 1 mg. of phenobarbital could be detected by the method described.

When phenobarbital was not found the material from ten tablets was combined, extracted with ether and subjected to reexamination for traces of phenobarbital. When tablets contained phenobarbital in amounts estimated to be larger than 5 mg., the material was assayed for phenobarbital according to the Alternative Method-Official described in "Methods of Analysis of the Association of Official Agricultural Chemists."[8] Because of its low solubility in a mixture of chloroform-ether, sulfathiazole was found not to interfere in this determination.

Results.—The results of examination of tablets of sulfathiazole-Winthrop for contamination with phenobarbital are provided in table 2. The specimens designated by numbers 1 and 2 were tablets supplied through the courtesy of the Food and Drug Administration. The specimens identified by numbers 3 to 21 inclusive were those supplied by the manufacturer. Except for the physically imperfect tablets there were no significant differences in the appearance of the various tablets of the lots of sulfathiazole-Winthrop designated by the letters MP. Slight differences in weight, fragility, color and design of the scribing apparently had no relation to the question of whether or not the tablets were contaminated with phenobarbital.

The results show that not all of the tablets in the MP 029 series were contaminated, but those which were contaminated contained practically 60 per cent of phenobarbital. In two specimens, 1 and 3, about 10 per cent of the tablets contained phenobarbital. In another sample of tablets (number 4) nearly all were uncontaminated; and in another (number 2), only one tablet out of twelve was uncontaminated.

Lot numbers identified by the firm as MP 051, MP 076 and MP 118, according to the manufacturer were made later than lot MP 029. Relatively few of the tablets examined from those made later were found to be contaminated, and in these the amount of phenobarbital was small. These observations bear out the report that the original contamination occurred in lot MP 029 and that the subsequent lots became involved because some tablets from the MP 029 series were ground up and added to the mixture of material for other lots in the MP series.

8. Methods of Analysis of the Association of Official Agricultural Chemists, ed. 5, p. 574, paragraph 46.

It may be noted from the table that the tablets in the MP 029 series which contained phenobarbital had slightly less than 60 per cent. As shown in table 1, the active ingredient in uncontaminated tablets of sulfathiazole-Winthrop amounted to 84 per cent. Further examinations of the heavily contaminated tablets were made and, for comparison, examination also was made of tablets of luminal-Winthrop, a brand of phenobarbital, purchased on the market. The results of chemical examination of a specimen of tablets luminal-Winthrop, 1½ grains, lot LP 215, are shown in table 3, together with results obtained on further examination of heavily contaminated sulfathiazole tablets of the MP 029 series and uncontaminated specimens of lot GP 252.

It may be noted that the compositions reported in table 3 for grossly contaminated tablets sulfathiazole-Winthrop and for tablets luminal-Winthrop, 1½ grains, appear to be identical. This fact may be of significance in attempts to trace the origin of contamination. The contaminated tablets of sulfathiazole-Winthrop, lot MP 029, which caused the difficulty, had a percentage composition essentially similar in all respects to that of

TABLE 3.—*Tablets Luminal-Winthrop and Sulfathiazole-Winthrop*

	Tablets Luminal-Winthrop (LP 215), per Cent	Contaminated Tablets "Sulfathiazole"-Winthrop (MP 029), per Cent	Tablets Sulfathiazole-Winthrop (BR 252), per Cent
Sulfathiazole	....	0.0 to 0.5	84.0
Phenobarbital	58.9	58.7	....
Excipient (cornstarch, stearic acid, talc)	41.0	41.0	16.0
Ash content	2.9	3.4	2.0
Color of ash	Grey	Grey	White
Reaction of ash	Alkaline (p_H 10)	Alkaline (p_H 10)	Slightly acid (p_H 6)

tablets luminal-Winthrop except for negligible quantities of sulfathiazole.

SUMMARY AND CONCLUSIONS

Tablets of sulfathiazole-Winthrop, reported to have been contaminated with phenobarbital, were examined. Tablets from lot MP 029 were found to be either uncontaminated or to contain about 60 per cent of phenobarbital, which is the relative amount of phenobarbital found in tablets of luminal-Winthrop. Likewise the inert ingredients of these contaminated sulfathiazole tablets and of luminal tablets were similar. Of the different samples of sulfathiazole provided by the firm for the purpose of examination, the highest incidence of contamination was about 10 per cent, the average incidence being much less. Except by chemical methods it was not possible to tell from examination of the tablets whether or not they might be satisfactory tablets of sulfathiazole or tablets containing about 5½ grains of phenobarbital. The incidence of contamination of other tablets in the MP series provided by the firm was small and the extent was slight.

The Feeling of Good Health.—One may be not definitely sick and yet lack the feeling of good health. This is expressed at times as not being up to "par." Health is not only a condition of freedom from disease but also a quality of life, and it is to our advantage to keep ourselves at the highest and best level of health attainable.—Williams, Jesse Feiring: Healthful Living, New York, Macmillan Company, 1941.

Therapeutics

THERAPY OF THE COOK COUNTY HOSPITAL

EDITED BY DR. LEROY H. SLOAN

THE THERAPY OF INFLUENZA

GEORGE W. SCUPHAM, M.D.
CHICAGO

Influenza has been essentially an epidemic disease, appearing in all parts of the world at variable intervals though exhibiting a certain periodicity and seasonal incidence. In addition to epidemic occurrence there have been a number of major pandemics in which the disease has spread with extraordinary rapidity and with a high incidence of morbidity and mortality. The last of these major pandemics was in 1918-1920. Preceding this there was a worldwide occurrence in 1889-1890 and also in 1847. The clinical and pathologic manifestations in all were of sufficient similarity to make certain that in each instance the same disease existed even though the cause was obscure. Epidemics appearing in 1769 and 1737 were probably identical.

Following the pandemic of 1918-1920 the disease recurred, and it has continued to make its appearance in minor epidemic forms in various parts of the world and for limited periods. These subsequent outbreaks, while showing the essential characteristics of the disease as it appeared in pandemic form, have been of milder type, with fairly high morbidity but distinctly lower mortality, displaying an absence rather than a presence of complications.

In sporadic outbreaks it is often difficult to identify the disease as influenza. In fact, respiratory diseases of all types, and even some nonrespiratory diseases, have been loosely called influenza (commonly the "flu"). This term covers a wide variety of clinical forms including the common cold both of epidemic and of sporadic variety. Respiratory infections caused by the hemolytic streptococcus, and pneumococcic infections too, are loosely included in this terminology, besides a variety of infections by other organisms commonly found in the respiratory tract. Likewise virus diseases not infrequently have been reported by careful observers under such terms as "influenza-like" infections.[1]

Jordan [2] in his monograph on influenza stated that the loose use of the term influenza had been the subject of comment by both physicians and patients. He referred to Humbolt's statement in which he designated influenza as "that senseless definition of a pathologic X." Mrs. Carlyle also was quoted: It appears that she had been subject to a number of attacks which her physician diagnosed as influenza. She expressed doubt in one of her letters by stating "Medical men all over the world have merely entered into tacit agreement to call all sorts of maladies people are liable to in cold weather by one name, so that one sort of treatment may serve for all, and their practice is thereby greatly simplified."

As the term "grip" and "intestinal grip" followed for many years the epidemic of 1889-1890, so the term "flu" and "intestinal flu" has covered a multitude of minor infections since that of 1918.

1. Reimann, H. A., and Stokes, Joseph, Jr.: An Epidemic Infection of the Respiratory Tract in 1938-1939: A Newly Recognized Entity, Tr. A. Am. Physicians **54**: 123, 1939. Reimann, H. A., and Havens, W. P.: An Epidemic Disease of the Respiratory Tract, Arch. Int. Med. **65**: 138 (Jan.) 1940.
2. Jordan, E. O.: Epidemic Influenza: A Survey, Chicago, American Medical Association, 1927.

At the present time doubt as to the cause of the disease can no longer exist and etiologic diagnosis is now possible.[3] The relation of a specific filtrable virus seems clearly established for at least one form. The virus can be isolated by spraying washings of the nasopharynx into the nares of ferrets, from which the true strain can then be obtained. It has been possible also to culture the virus on the chorioallantoic membrane of the chick embryo, which also serves for its primary isolation. It is thus different from the virus of the common cold, which apparently will not develop under these conditions.[4] The effects of the virus can be neutralized by the serum of animals or of persons who have recently recovered from the disease. The antigenic properties of the virus aid in diagnosis by a complement fixation test of the serum infected persons or animals. A flocculation reaction has also been demonstrated when the serums of patients who have recovered from the disease have been mixed with suspensions of lung tissue of mice infected with the specific virus.[5] By methods such as these it is possible to differentiate this virus from other similar ones. A close relationship between human influenza and that of swine has been suggested by such observations.[6] The results strongly suggest the identity or close relationship of the two diseases.

Magill and Francis [7] showed that there were both decided differences and many similarities in the antigenic characteristics of twenty-four strains of epidemic influenza virus. The differences were not great enough to separate them into distinct types. The multiplicity of strains may account for repeated attacks to which certain persons seem to be susceptible. The duration of immunity is relatively short.

Thus it can be said that, while much has been learned of the etiology of the disease, further studies are necessary to clarify important factors. The prevalent epidemic may offer the opportunity to clear up some of the gaps present at this time. The relationship of Haemophilus influenzae to the disease is now established as that of a secondary invader. The same is true of other organisms, various types of pneumococci and streptococci, all of which were found and considered possible causal factors in the last and previous pandemics. Reimann [8] stated that three forms of pulmonary infection have been called influenzal pneumonia. The first is caused by the virus itself, the second by Haemophilus influenzae and the third represents an infection by a variety of bacteria, as either single or multiple infections resulting from the effect of the virus on the lungs, thereby sensitizing them, or by the general systemic shocklike effect of a severe influenza.

The clinical manifestations of the disease are variable. During pandemics all variations present themselves in individual cases. Subsequent outbreaks have, on the whole, been mild in comparison to the severity of the disease and the number and frequency of complications in the 1918 version. These variations include subclinical infection with few or no symptoms as well as the most violent and rapidly progressing pneumonia.

3. Horsfall, F. L., Jr.: Present Status of Knowledge Concerning Influenza, Am. J. Pub. Health **30**: 1302 (Nov.) 1940.
4. Chapman, Jeannette, and Hyde, R. R.: Antigenic Differences in Viruses from Cases of Influenza and Colds, Am. J. Hyg. (section B) **31**: 46 (Jan.) 1940.
5. Magill, T. P., and Francis, Thomas, Jr.: A Flocculation Phenomenon with Human Sera and Suspensions of the Virus of Epidemic Influenza, Proc. Soc. Exper. Biol. & Med. **39**: 81 (Oct.) 1938.
6. Shope, R. E.: The Influenzas of Swine and Man, Medicine **15**: 453 (Dec.) 1936.
7. Magill, T. P., and Francis, Thomas, Jr.: Antigenic Differences in Strains of Epidemic Influenza Viruses, Brit. J. Exper. Path. **19**: 273 (Oct.) 1938.
8. Reimann, H. A.: Infectious Diseases: A Review of the Current Literature, Arch. Int. Med. **62**: 306 (Aug.) 1938.

The incubation period is about two days. The onset of the disease is sudden and the first symptoms are usually constitutional. Chilly sensations, general aching pains and headache with the rapid appearance of fever are characteristic. Respiratory symptoms appear later, usually a short cough, sore throat, coryza and epistaxis. A tracheobronchitis usually dominates the picture. The patient is drowsy, and the face shows a peculiar livid cyanosis. Conjunctivitis is common. The pharyngitis is characteristic with definite redness of the posterior wall and soft palate, while the hard palate is strikingly pallid. The manifestations in the chest are variable from complete absence of abnormalities to a "wet" pneumonia with rapid pleural effusion and frothy bloody sputum. The intermediate changes are those of a coarse bronchitis or bronchiolitis. The latter is characteristic. During the epidemic of 1918 relative bradycardia was common. Leukopenia was the rule until secondary infection made its appearance. (Even then it often persisted.) Convalescence was prolonged and mental and physical depression striking even in milder cases. The mortality was very high in pregnant women, and abortion was the rule. These features have not been consistent in the recurrent waves of the disease.[8] The duration of the disease was variable according to its severity. The average patient who recovered had an active stage of seven to ten days, with slow convalescence. At the present time the average duration is less (three or four days) with relatively rapid convalescence.

While it is not possible to make an arbitrary diagnosis without virus studies, the clinical appearance is often sufficiently characteristic so that the diagnosis is not much in doubt. The sporadic case or cases occurring in limited epidemics present greater difficulties, as the observations of Reimann and others indicate.

THERAPY

Prophylactic.—Influenza is a highly contagious disease during periods of severe epidemics. Either immunity is lost after a period or new strains are responsible for the high incidence and apparent lack of immunity. The disease gains entry into the body through the respiratory tract. It is transferred from one infected person to another by direct contact or by discharges from the nose and throat. Droplet infection [2] results from discharge of small particles from the mouth, nose and throat as the result of sneezing, coughing or even talking. Such small particles may remain suspended in the atmosphere in either the moist or the dried state, with a capacity for transference of infection. It can readily be understood how and why the disease can be rapidly and widely disseminated under the crowded conditions of barrack life. The same applies to contacts in schools, churches, movies and all other gatherings of people. Let the healthy protect themselves from the sick and the sick shun those not afflicted. Robertson, Biggs, Miller and Baker of the University of Chicago have just announced a method of sterilizing the air by a propylene glycol mist which may be applicable to the prevention of influenza. It would seem that this method could be put to practical use in the present wave of influenza.

Natural immunity or acquired active immunity is thought to exist in some persons. It has not been possible to predict with certainty whether or not the degree of immunity is sufficient to give complete protection. Neutralization of a known virus by the serum of a convalescent person is presumptive evidence.[9] The secretions of the nose seem to have some inhibiting effect on the growth of the virus.[8]

A number of virus preparations have been employed in an attempt to produce active immunity. None have been entirely successful, unless the new vaccine of Horsfall and Lenette [10] can be so regarded. The discovery of this procedure seems to have been accidental. A vaccine prepared from ferrets, in which ferret distemper occurred simultaneously with experimental infection by human influenza, was injected into animals to immunize them. These animals were found to be immune to three antigenically different strains of human influenza. Subsequently it was found that animals inoculated with a mixture of canine distemper virus and human influenza virus produced a vaccine which would immunize animals to massive doses of all the strains of influenza virus available. The vaccines thus produced have been tested on human beings. The serum of volunteers thus immunized has been found to show a decided increase in the virus antibodies against all strains of influenza virus obtainable. These experiments indicate a probable highly effective method for the prevention of influenza which may be available for general use when the investigative work has been completed.

Unfortunately, the contagious period is probably during the stage of invasion before the presence of illness becomes well defined. At any rate, the patient should be isolated and visitors excluded. The room should be relatively bare, with no more furniture than is required. In past epidemics the disease has been transmitted particularly to the attendants. The morbidity among physicians and nurses has been high. Because of this, it has been customary for attendants to wear masks over the nose and mouth whenever contact with the patient is made. Although this may reduce the liability of infection, it is not a certain means of escape. In fact, only the complete isolation of the case has been entirely successful. Contamination of hands and dishes are other means of transmission. The measures to be employed are obvious. Dishes should be sterilized by boiling, and soap and water used liberally on the hands after contact. Discharges from the nose and sputum should be collected in tissues and disposed of in the usual paper bag attached to the bedside. These should be collected frequently and destroyed by burning. The safe period of quarantine is variable and probably should be continued until all discharges have ceased. Vaccination of physicians, nurses and attendants may shortly be possible. Methods now in use to prevent the common cold may protect against influenza (pooled cold vaccines by hypodermic or by mouth protect to a certain degree).

Active.—Much of the treatment depends on the facts discussed. The individual severity as well as the general intensity of the epidemic will determine the program. While recurrent waves since 1920 have been mild, it is reasonable to believe that subsequent epidemics will again increase in severity.

Since influenza is largely a self-limited disease, the treatment of the average patient without complications is symptomatic. The patient should be put to bed and kept there. Bed rest should be enforced until three to

9. Stokes, Joseph; Chenoweth, Alice D.; Waltz, A. D.; Gladen, R. G., and Shaw, Dorothy: Results of Immunization by Means of Active Virus of Human Influenza, J. Clin. Investigation **16**: 237 (March) 1937.

10. Horsfall, F. L., Jr., and Lenette, E. H.: A Complex Vaccine Effective Against Different Strains of Influenza Virus, Science **91**: 492 (May 24) 1940.

five days after all fever has disappeared if no complications have arisen. If these procedures are rigidly maintained, the possibility of complications is unlikely. The exceptions are those attacks of increased virulence such as were seen in the last pandemic. The patient should not be allowed to leave his bed under any circumstances. Bed pans and urinals should be used. Changes of clothing and bed linen should be accomplished without removing the patient from the bed. The bed covering should be light and of sufficient warmth to keep the patient comfortable. Approximately 68 F. is the optimum room temperature, neither too warm nor too cool. Sudden changes in room temperature or too cool an environment result in increased tracheal irritation and excessive coughing. The habit of placing patients out "in the open," on "side porches" or in open "sun parlors" is to be condemned.

The patient with a severe attack of influenza is apprehensive. In the stage of convalescence he is depressed mentally and physically out of proportion to the severity of his illness. He should be reassured as to his condition, and his surroundings should be made as cheerful as possible. Mental tranquillity is more important than in other acute illnesses. Tepid sponges for high fever (102-104 F.) followed by warm alcohol rubs and light massage help achieve both physical comfort and mental relaxation.

The fluid intake should be adequate and may consist of water, sweetened fruit juices and palatable carbonated beverages. The patient frequently is nauseated, and this together with drowsiness may interfere with the intake of both food and fluid. If not possible to achieve an intake of 3,000 to 4,000 cc. by mouth, the balance may be made up by parenteral administration of physiologic solution of sodium chloride or 5 per cent dextrose in physiologic solution of sodium chloride. If a real effort is made, the needed amount can usually be given by mouth.

The diet can be left partly to the desires of the patient. Solid food is distasteful, and the chances of overindulgence are negligible. Because of the relatively short duration of the disease, a bland, relatively high carbohydrate diet is satisfactory. If the patient refuses food, the caloric intake may be increased in liquid form with fruit juices, sugar, milk, eggnog, lactose and the like. It is desirable to maintain the nutrition of the patient by an adequate food intake. Convalescent weakness may thus be minimized. Flatulence may be avoided by judicious use of fruit juices and well cooked vegetables and fruits. At times adding solids and reducing the liquid intake will control such flatulence. Any of the mild laxatives may be necessary. No advantage is gained by repeated catharsis. It is to be condemned. A glycerin suppository may suffice, or a small saline enema.

Throat irritation and soreness can be controlled to some extent by mild alkaline gargles. Isotonic solutions of sodium chloride or sodium bicarbonate are highly satisfactory when used warm. Compound solution of sodium borate is still very useful, and but little improvement can be made on it. Nasal obstruction is often of such severity that it becomes a distressing symptom which requires relief. This can often be accomplished by the use of 2 per cent ephedrine sulfate in physiologic solution of sodium chloride. Amphetamine inhalers used with caution give much relief. Inhalations of steam are grateful not only for nasal irritation but for the distressing cough which accompanies acute tracheitis. A humidifier is serviceable also in such conditions. A few drops of 10 per cent menthol in alcohol added frequently to the water can be used. Ice collars, oily sprays and nose drops (such as liquid petrolatum) are to be used with care.

The headache and general aching pains are relieved by acetylsalicylic acid or acetophenetidin. Ten grains (0.6 Gm.) of the former or 5 grains (0.3 Gm.) of each every four hours is effective. If codeine sulfate or phosphate in ¼ to ½ grain (0.015 to 0.030 Gm.) doses is added, not only is the analgesic effect increased but the irritative tracheal cough is well controlled. Restlessness and insomnia are usually the result of discomfort. In the case of extreme discomfort and restlessness, morphine early in small doses is often necessary to secure adequate rest. The importance of rest cannot be overestimated. Barbituric acid drugs in the form of phenobarbital, ½ to 1½ grains (0.03 to 0.10 Gm.) in average dosage are usually adequate.[11] In some cases better results are achieved by smaller doses (½ grain) repeated three or four times a day.

The results of chemotherapy with the sulfonamide group of drugs in the treatment of influenza have not been established. The cases in which this type of treatment has been used are those relatively mild ones which have occurred in more localized waves of the disease in the past two years. Since these are of short duration and recovery is prompt under any conditions, adequate evaluation has not been possible as far as the virus phase of the disease is concerned. The leukopenia of severe influenza might be considered a theoretical contraindication. Should a complicating secondary infection develop, the use of such drugs will depend on the type of organism present and the nature and severity of the infection. It seems reasonable to feel that failure of the fever to subside in two to three days, except in cases of very severe involvement, may be an indication for the use of a sulfonamide combined with type-specific serum if a specific type of pneumococcus is isolated. Sulfanilamide is probably the drug of choice in streptococcic infections. For the various types of pneumococcus and for Haemophilus influenzae, sulfapyridine or sulfathiazole should be used. Recent reports of successful management of meningitis due to Haemophilus influenzae infection are encouraging.[12] Perhaps sulfathiazole will have the widest field of usefulness under the circumstances. The present wave of the disease should provide an opportunity for the evaluation of these drugs and of their effectiveness. It is unnecessary to emphasize the need for caution. It would seem unwise to administer any of these compounds in the average case of mild involvement, especially if the patient is treated in the home, unless adequate precautions are taken to avoid the serious toxic effects which may appear (granulocytopenia, anemia, purpura).[13]

No specific measures for the control of the disease have been discovered. The use of convalescent serum has been described a number of times. It was employed by McGuire and Redden[14] in the pandemic of 1918. Five hundred cc. of blood from ten day convalescent patients is obtained under strictly sterile technic, incu-

11. Aminopyrine should be avoided with barbitals.

12. Hamilton, T. R., and Neff, F. C.: Influenzal Meningitis with Bacteremia Treated with Sulfapyridine, J. A. M. A. **113**: 1123 (Sept. 16) 1939. Noone, E. L., and Kennedy, P. J.: Influenzal Meningitis: Report of Two Cases with Recovery; One Case Complicated by Paroxysmal Tachycardia, ibid. **115**: 2060 (Dec. 14) 1940.

13. If the differential blood smear shows a goodly proportion of granulocytes, sulfathiazole is not contraindicated.

14. McGuire, L. W., and Redden, W. R.: Treatment of Influenzal Pneumonia by the Use of Convalescent Human Serum, J. A. M. A. **71**: 1311 (Oct. 19) 1918; **72**: 709 (March 8) 1919.

bated for one hour, cooled in a refrigerator for twelve hours, and the serum removed by slowly decanting or by centrifuging; it is used in dose of approximately 120 cc. More recent work on the immunology of the disease shows that specific antibodies tend to disappear from the blood of convalescents rather rapidly,[3] so that after a year they have effectively disappeared. In the event of the occurrence of a severe epidemic or of sporadic cases of severe pneumonia, pooled convalescent serum should be, and no doubt will be, extensively employed. Although no definite results can be predicted, it seems reasonable to believe that good results, when adequate amounts of serum are used, may be expected.

The more effective methods for the administration of oxygen developed in the last decade have resulted in a wide application of this form of therapy. Instead of being confined as a gesture to the terminal stage of the disease, it is now generally employed with great therapeutic effectiveness. This is true particularly of pulmonary and cardiac diseases. The need for oxygen in influenza will be recognized in each individual case as the necessity for it arises. Indications are no different than in other varieties of pneumonia. Increasing toxemia, cyanosis, dyspnea and restlessness and apprehension are symptoms which suggest its use. Early employment in cases of very severe involvement may be of great value in carrying the patient through until natural immunity develops or until improvement by means of serum or chemotherapy can be obtained. The cyanosis and dyspnea produced by a rapidly developing pleural effusion of serohemorrhagic, hemorrhagic or even seropurulent character must not be treated by oxygen to the disregard of the relief of the effusion. Early aspiration is indicated, and repeated aspiration may be necessary.

The complications of epidemic influenza are many. Pneumonia is usually regarded as part of the disease pattern rather than as a complication. This appeared to be the situation in the pandemic of 1918 and in early recurrent waves. Since then, in the milder epidemic appearances, pneumonitis has not been a striking or a frequent finding; rather the exception. The character of such pulmonary involvement was a liquid hemorrhagic pneumonia. The rapid progress, severe cyanosis and early fatal termination in such cases was striking evidence of the virulence of the infective agent and the extent of pulmonary involvement. The conditions found on physical examination varied from those of bronchiolitis with localized patches of fine rales to extensive consolidation and profuse moist rales (confluent bronchopneumonia).

In the event of the appearance of these manifestations, a special effort should be made to determine the type of secondary infecting agent. If it should prove to be of the pneumococcus group, further efforts to differentiate a specific type should be made and adequate chemotherapy instituted at once. If the hemolytic streptococcus is found, sulfanilamide is the drug of choice although sulfathiazole may later prove to be more effective.

Pleurisy was exceedingly common in the last great epidemic. If it manifests itself merely as pleuritic pain, the application of local heat and strapping of the chest with adhesive tape or with one of the elastic chest bandages, or even a plaster of paris support, are usually sufficient. Sometimes morphine is indicated early in the course of the disease. Pleural exudates appear with extraordinary rapidity. It was not uncommon to find massive exudates developing over night.

These exudates were a common cause of death and early overlooked. This was at times because intense bronchial breathing could be heard over such an area, and the exudate was mistaken for consolidation. Aspiration of the contents of the pleural cavity under such conditions may be a life saving measure. Even the suspicion of the presence of fluid in the chest is an indication for a diagnostic tap. Physical examination of the chest should be repeated at least twice a day; even under such careful observation exudates may be overlooked: "bronchial breathing and no rales → Aspirate at once."

Such exudates were often serous or serohemorrhagic, sometimes seropurulent. It was common for an exudate to begin as a serous type and later become purulent. Treatment of the condition as one of empyema became necessary. The closed method, without rib resection, was found to be effective. Difficulty was encountered because of the frequency with which intralobar empyema occurred. The diagnosis is difficult. Roentgen examination is usually necessary for confirmation. In any case in which complete recovery does not occur in the expected length of time, and in which no adequate explanation for continued illness can be found, such an exudate must be immediately considered.

The most startling complication encountered in 1918 in this disease was the sudden appearance of subcutaneous emphysema at the base of the neck extending down over the chest. It is the result of bronchial or peripheral alveolar rupture into the mediastinum or peripleural space. Sometimes the emphysema was limited to the mediastinum, in which case peculiar crackling sounds could be heard with each heart beat. Sometimes it extended up into the neck as well as over the chest or, in extreme cases, over the entire body except for the soles of the feet and palms of the hands. Spontaneous pneumothorax occurred often. These phenomena are the result of an interstitial emphysema occurring within the alveolar structure with rupture of a peripheral alveolus. Cough must be controlled when this occurs, because with each paroxysm air is forced out of the lungs. Other measures are seldom necessary, but release of air by insertion of a large needle into the pleural cavity may be required.

Conjunctivitis, while often quite severe, usually does not require specific treatment. Warm or cold moist boric acid compresses applied over the eyes give symptomatic relief. The appearance of otitis media may be regarded as an indication for the use of one of the sulfonamide group of drugs in addition to the usual measures employed in the treatment of this condition. The same may be said of acute sinusitis, a rather common complication.

Because convalescence is apt to be slow, allowance is made for at least a two week period in cases of severe involvement. During this time a continued rest program with gradual increase in motor activity is important (graduated exercise—walking on the level → walking on graduated slope, cool baths and so on).

Fatigue is a striking complaint during convalescence and quite characteristic. It is often associated with mental depression. Apparently with fatigue there is an associated loss of resistance to secondary infection, and complications are likely to occur. In 1918 many of the most virulent attacks of pneumonia developed after apparent recovery and convalescence. Avoidance of exposure to cold and chilling of the body surface is

equally important. Apparently all the factors which may be responsible for the development of the common cold are also factors in the recurrence of influenza. Of these fatigue is the most important, and fatigue in convalescence develops very quickly.

One of the most unfortunate late complications of pandemic influenza has been epidemic encephalitis or encephalomyelitis. The clinical picture resulting is that of the familiar Parkinson state. For this reason one is tempted to suggest that maximum doses of the vitamin B group may well be indicated accompanied by the use of thiamine hydrochloride 15 mg. a day by hypodermic and the vitamin B complex containing perhaps 5 mg. of riboflavin and from 150 to 300 mg. of nicotinic acid. At the present time one should not be too constrained to scoff at a possible relationship of a vitamin E deficiency, and it would bear trial to give a patient in this condition early a minimum if not a maximum dose of the concentrate of vitamin E (ephynal). It is possible that in this field may be found a prophylactic for the well known muscular weakness both peripheral and central (cardiac) which so often complicates or is a sequela to its effects.

PRESCRIPTIONS

Laxatives: Liquid petrolatum 4 drachms (15 cc.) at night, fluidextract or aromatic fluidextract of cascara sagrada 1 or 2 drachms (4 to 8 cc.) in the early morning, heavy magnesium oxide 20 grains (1.3 Gm.) at night, glycerin suppository in morning, saline enema.

Flatulence: Bland diet, well cooked low starch vegetables and fruits; avoid excess of total liquid, substitute solid food relatively early. Heat to the abdomen, regular bowel habit. Tincture of belladonna 7 to 10 minims (0.4 to 0.6 cc.) three to four times daily. Substitute hot fluids for cold.

Gargles: Alkaline aromatic solution. Warm physiologic solution of sodium chloride. Physiologic solution of sodium chloride with sodium bicarbonate roughly 2 drachms (8 cc.) of sodium chloride and 1 drachm of sodium bicarbonate to 1,000 cc. Sodium bicarbonate 1.2 Gm. in 120 cc. of antiseptic solution N. F. used half strength. Sodium bicarbonate and sodium biborate 1.2 Gm. of each in cinnamon water to make 120 cc.

Additions to steam vapors: Spirit of menthol (10 per cent menthol in alcohol from 15 to 30 drops in boiling water frequently as inhalant). Compound tincture of benzoin 1 drachm to 1 pint of boiling water every hour.

Sedatives: Powder of ipecac and opium 0.65 Gm. (10 grains) taken with hot lemonade for diaphoresis and sedation.

General aching; joint pains: Acetylsalicylic acid 0.3 Gm. (5 grains), acetophenetidin 0.3 Gm. (5 grains); mix and put in capsules, one to be given every six hours. Or mix and make a total dose of acetylsalicylic acid 0.24 Gm. (4 grains), codeine sulfate 0.015 Gm. (¼ grain), citrated caffeine 0.03 Gm. (½ grain), phenobarbital 0.015 Gm. (¼ grain). Acetylsalicylic acid compound, one every four hours.

Stimulating cough mixtures:

1. Ammonium carbonate 5 Gm., anise water 12 cc., syrup of acacia to make 60 cc.; 4 cc. (1 drachm) every two hours.

2. Ammonium chloride 5 Gm. (1 drachm), syrup of ipecac 15 cc. (4 drachms), syrup of glycyrrhiza to make 60 cc. (2 ounces); teaspoon in water every two hours.

3. Ammonium chloride 10 Gm. (2 drachms), syrup of cherry (Dr. Fantus has already called attention to the wisdom of using syrup of cherry rather than the syrup of wild cherry) to make 120 cc. (4 ounces); teaspoon in cup of water every two hours.

4. Syrup of hydriodic acid 15 cc. (3 drachms), syrup of cherry to make 60 cc. (2 ounces); two teaspoons in cup of water every four hours.

Sedative cough mixtures:

1. Codeine sulfate 0.25 Gm., syrup of cherry to make 60 cc.; teaspoon in water every three hours.

2. Codeine sulfate 0.5 Gm., syrup of tolu balsam 60 cc., syrup of wild cherry to make 120 cc.; one teaspoon in water every three to four hours.

3. Codeine phosphate or sulfate directly in ¼ to ½ grain dose (0.015 or 0.030 Gm.).

4. Elixir of terpin hydrate with codeine, one teaspoon every two to three hours for severe cough.

5. Codeine phosphate 0.5 Gm., aromatic syrup of eriodictyon to make 60 cc.; 4 cc. (1 drachm) in water every two to four hours.

A capsule prepared of papaverine hydrochloride 0.016 Gm. (¼ grain) and codeine phosphate 0.016 Gm. (¼ grain) has been used in the treatment of the common cold. It should be useful in the early stages of exudative influenza.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS. HOWARD A. CARTER, Secretary.

INTERMEDIATE BOVIE ELECTRO-SURGICAL UNIT ACCEPTABLE

Manufacturer: The Liebel-Flarsheim Company, 303 West Third Street, Cincinnati.

The Intermediate Bovie Electro-Surgical Unit is said by the manufacturer to be essentially the same as the Council accepted Universal Bovie except for a difference in the construction of the cabinet. The cutting and coagulation currents of the two units are said to be similar in power and characteristics; the power output controls have been placed in a different position on the Intermediate and are of a slightly different type.

Intermediate Bovie Electro-Surgical Unit.

The apparatus is of a semiportable type, the unit proper being encased in a steel cabinet which is mounted on a subcabinet (optional) also of steel construction. The unit proper weighs 70 pounds and is 16 inches high by 15 inches deep: when mounted on the subcabinet it is 41½ inches high. The subcabinet provides storage space for the accessories.

The control panel is located on top of the apparatus and this position is said to be easily accessible to the operator, who may stand in front of, behind or on either side of the unit.

In the Council's clinical investigation of the apparatus it was found to give efficient service in all operative procedures. The control of intensity in cutting desiccation is satisfactory, and hemorrhage control was efficient when the proper loop electrodes were used in underwater cutting.

The Council voted to accept the Intermediate Bovie Electro-Surgical Unit for inclusion on the Council's list of accepted devices.

HOMOZONE

(Ozone Generator)

NOT ACCEPTABLE

Manufacturer: The Automatic Electric Devices Company, 324 East Third Street, Cincinnati.

Because of many inquiries coming to the Council for information on the Homozone apparatus, the Council regarded the preparation of a report advisable. This report is based on an examination of the advertising for Homozone.

"Nature's Own Health-Restoring and Air Purifying Agent . . . Now . . . Man Made and Controlled!" is the manner in which the Homozone is described in the advertising literature. The copy makes it very clear that the advertiser considers the apparatus necessary to an individual's well-being, as indicated in the following: "Without it (oxygen), we would die within a few minutes. Contaminate our supply of Oxygen, with smoke or foul, disease laden impurities . . . and headaches develop . . . we become easily fatigued . . . our resistance to disease is decreased, and if continued, our Health

is eventually endangered. Ordinary OXYGEN (O_2) consists of two atoms of oxygen to the molecule . . . OZONE (O_3) contains ONE *additional* atom of Oxygen or THREE atoms of OXYGEN altogether. No chemical, vapor, nor anything else is added . . . it's just 3 atoms of Nature's own pure Oxygen combined together, instead of but 2 atoms as Oxygen exists in its usual state."

In presenting evidence to the public as to the usefulness of the device it is stated: "So while some might question the efficacy of ozone, it should be remembered that even experts have been and still can be wrong. And as the old saying, 'the proof of the pudding lies in the eating thereof,' the practical value of ozone is best proven by what it has done for others—a story which we feel can be better written by its actual users." Then are listed ". . . a few of the many letters which we have received from Homozone users." These letters of recommendation include one from a man in Detroit who purchased a Homozone and states he cured his wife's tuberculosis and sinus condition when physicians had done nothing to help her; a professor in a barber college finds that his students have had no headaches or colds since the installation of the device; a man who had been deafened in one ear by a severe cold found that in a few days his hearing was restored by the use of the Homozone. There are also included many other letters from persons who state that the use of the Homozone relieved or cured their bronchitis, colds and sinus conditions.

The Council has on several occasions in the past declared certain ozone generators to be not acceptable for inclusion on its list of accepted devices. This action has been taken because of the manner in which the devices were promoted and because, contrary to aiding well-being, exposure to ozone may result in irritation of the mucous membranes of the nose, throat and lungs, headaches, drowsiness, fatigue and a burning sensation in the eyes. The firm's evidence presented in the form of testimonial letters is not regarded as critical and, in the opinion of the Council, does not substantiate the claims made by the manufacturer that the Homozone is useful for "General Health Building," "Respiratory Ailments," and that it is ". . . a most valuable aid in the relief of many and diversified ailments." Recent investigations have confirmed earlier observations that for ozone to be even slightly effective as a bactericidal agent it must be present in such concentrations as are distinctly harmful to the delicate membranes of the nose, throat and lungs of a human being.[1] Regardless of where or how it is generated, ozone has little effect on bacteria except in strong concentrations which are harmful to the human being as well.

A section of an advertising booklet describes the "Hom-Ozone-Izer, Electro-Chemical Vaporizer," an accessory used with the Homozone for the purpose of dispensing a medicament as vapor. This medicament is called "Mist-O-Zone" said to "contain several proven medicaments of the Gymnospermae and Pinales groups." In presenting evidence for the usefulness of the device, it is stated, "For as pointed out in Vol. 90, No. 15, April 14, 1928 issue, (pages 1197-1198) of the Official Journal of the American Medical Association, and as attested to by many prominent physicians, investigators, clinics, institutions, etc., therein apparently marked relief and assistance was obtained through inhalations of ozone combined with certain products of the Pinales group, which form, in combination with ozone, an entirely new and different compound, easily inhaled, soothing, cooling, and above all, beneficial, as the statements therein definitely indicate." THE JOURNAL report referred to was a report by the Council on Pharmacy and Chemistry on a similar device which was found to be unacceptable to that Council. The report was highly unfavorable and by no means endorsed the foregoing advertising statements. The reference as it is used by the firm in its advertising is misleading because it indicates a favorable report.

In addition to the health claims made for the Homozone unit it is also claimed that it is effective as a deodorizer. The firm states: "The Homozone Actually DESTROYS Odors, . . . It Does Not Merely MASK Them!" The Council has, in earlier reports, expressed the opinion that ozone is ineffective as a deodorant—that it merely masks the original odor with a substitute odor. As an oxidizer for fumes, odors or gases, ozone has been found to be ineffective.[2] Ozone tends to fatigue the sensory nerve endings which govern the sense of smell so that an individual can no longer smell the odors.

The firm reproduces in the advertising many letters from funeral parlors, theaters, chicken hatcheries, animal hospitals and kennels, which state that the Homozone has been useful as a deodorizing agent. The Council does not regard this as critical evidence to substantiate the firm's claim that the device destroys odors.

The Council voted to declare the Homozone unacceptable for inclusion on its list of accepted devices because of the objectionable advertising used in promoting the device to the public, and because the claims made by the manufacturer are unsubstantiated by critical evidence.

1. Kendall, A. I., and Walker, A. W.: Effects of Ozone on Certain Bacteria, J. Infect. Dis. **58**: 204 (March-April) 1936.

2. Ozone in Ventilation, Pub. Health Rep. **35**: 989 (April 23) 1920.

Council on Pharmacy and Chemistry

BACTERIOPHAGE THERAPY: II.

IN 1934 THERE WAS PUBLISHED IN THE JOURNAL UNDER THE AUSPICES OF THE COUNCIL A SERIES OF ARTICLES ON THE STATUS OF BACTERIOPHAGE THERAPY, BY DRS. EATON AND BAYNE-JONES. RECENTLY THE COUNCIL FELT THAT SUBSEQUENT DEVELOPMENTS IN THIS FIELD MIGHT WARRANT A RESTUDY OF THIS SUBJECT. DR. A. P. KRUEGER, PROFESSOR OF BACTERIOLOGY AT THE UNIVERSITY OF CALIFORNIA, AND HIS COLLEAGUE, DR. E. JANE SCRIBNER, KINDLY AGREED TO MAKE THE NECESSARY STUDY AND TO WRITE A REPORT. THEIR REPORT, WHICH FOLLOWS, HAS BEEN ADOPTED BY THE COUNCIL AND AUTHORIZED FOR PUBLICATION. IN AUTHORIZING THE PUBLICATION, THE COUNCIL EXPRESSES ITS GRATITUDE TO DRS. KRUEGER AND SCRIBNER FOR THEIR EXCELLENT STATUS REPORT.

OFFICE OF THE COUNCIL.

THE BACTERIOPHAGE

ITS NATURE AND ITS THERAPEUTIC USE

ALBERT PAUL KRUEGER, M.D.
AND
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BERKELEY, CALIF.

(Concluded from page 2167)

3. CLINICAL EVIDENCE REGARDING USEFULNESS OF PHAGE IN TREATING INFECTIOUS DISEASES

In concluding their extensive and critical review of the earlier literature on the phage treatment of human infections, Eaton and Bayne-Jones [1] stated that in their judgment the evidence for the therapeutic value of phage was largely contradictory. They granted the existence of convincing data in only two fields, namely the treatment of localized staphylococcic infections and cystitis. Since 1934 many more clinical reports have accumulated and we have attempted to summarize in the following section the relevant facts pro and con gleaned from these recent publications.

The evaluation of practically any therapeutic modality is admittedly difficult, and an analysis of the clinical application of phage presents no exception to the general rule. Many of the papers are based on inadequate clinical series or are frankly polemical. Even when these objections are met it is no easy matter to arrive at a fair picture of the effectiveness of phage therapy, for few diseases have the uniformity of duration, severity and mortality conducive to the attainment of statistically valid conclusions. One is left to wonder what the patient's progress would have been if no treatment, or some entirely different treatment, had been instituted. In other words, for reasons apparent to any one who has practiced medicine, strictly scientific control groups are hard to obtain and most studies are free from their

salutary influence. This is not peculiar to phage investigations, of course, but it is of such common occurrence among them that it is hard to find in the majority of accounts anything more than the authors' opinions of results accomplished with phage as compared to the results which their experience has accustomed them to expect when other measures are employed. Usually the art of medicine is exercised in the choice of therapy particularly suited to the case in hand and the task confronting the reviewer of phage literature is to weigh the evidence establishing the position of phage in the practitioner's armamentarium; is it a method of choice, one of occasional application or should it be omitted altogether? These are the essential questions, and their answers should reflect not only the data laboratory experience affords but, more decisive still, the all important consideration "Does it work clinically?"

1. *Enteric Diseases.*—These diseases comprise one of the most favorable groups for evaluation of phage therapy. In some of them (dysentery and cholera) the organisms are restricted to the bowel and do not invade the blood stream or other tissues of the body. Since the bowel contents normally contain some sort of phage, and since they can at times support active growth of pathogenic organisms, one may assume that there exist here relatively propitious circumstances for phage production, provided the appropriate phage is introduced. As has been pointed out in section 2, this applies only to the intestinal lumen, for in the deeper tissues there is little likelihood of extensive phage formation taking place. Another limiting factor is the difficulty encountered in getting phage past the inactivating effects of the gastric juice and bile.[59] Both secretions can take a heavy toll of phage activity, although in practice the administration of phage on an empty stomach, after preliminary alkalization with sodium bicarbonate, seems to assist its passage in the active form. For the same reason some workers (Seidlmayer,[60] Vaill and Morton[61] and others) give phage retention enemas daily.

The natural occurrence of antidysentery phage in the stools at times during the course of bacillary dysentery has been recommended as a diagnostic aid. During the outbreak of institutional dysentery due to the Hiss-Y strain Feemster[62] was able to isolate the causal organism from 23 per cent of patients in the first week of illness and from 13 per cent in the second week. The homologous phage was found in 33 per cent of cases in the first week, 80 per cent in the second and 45 per cent in the third. A further test of this diagnostic aid was conducted by Mackie[63] in connection with a group of patients presenting the clinical picture of chronic bacillary dysentery. In only 29 per cent could he detect a phage active against the dysentery bacillus, while 13 per cent of a noninfected control group gave positive tests for such a phage. He concludes that the presence of dysentery phage in chronic intestinal infections has little diagnostic significance and that the term "diagnostic bacterio-phage" is a misnomer.

At the time of the Eaton-Bayne-Jones survey the results obtained in the phage treatment of bacillary dysentery were highly controversial. Numerous enthusiastic accounts were quoted but few of them could be accepted as offering conclusive evidence in favor of phage therapy. In a small number of well controlled series no difference in the course of the disease or in the mortality between treated and control groups was observed. The same situation obtains today. Some authors, e. g. Compton[64] and Murray,[65] recommend phage therapy without reservation and feel that 90 per cent of patients with bacillary dysentery benefit from it. Others have used it with good success in prophylaxis against dysentery. For example, Melnik, Nikhinson and Khastovitch[66] report their experience with three large groups of children. Group 1 received 1 cc. of dysentery phage at ten day intervals for seven doses, group 2 the identical amount of phage plus ox bile and group 3 nothing at all. The dysentery morbidity rates subsequently observed were group 1, 1.44 per hundred; group 2, 0.15, and group 3, 6.38. Haler[67] used phage to control an institutional dysentery epidemic due to infection with the Sonne type of bacillus. The data suggest that one patient served as the "shedder" of organisms and eleven other children received their infection from him. The twelve sick patients, twenty-one unaffected children and the institution staff members were given phage. Within two days one more child became ill; then the epidemic halted abruptly.

Careful observations of phage therapy in five patients infected with the Flexner type of dysentery bacillus were made by Vaill and Morton.[61] They also obtained considerable data from a larger group of patients in a neighboring community for whom they supplied phage. In their judgment the early persistent administration of phage in large doses by mouth and by rectum is a useful procedure.

Seidlmayer[60] has had an interesting experience with the phage treatment of bacillary dysentery in children coming to a Munich pediatric clinic during the three year period 1936-1938. As far as was possible, alternate cases were selected for the treated and control groups. Most of the patients had Kruse-Sonne infections and those to whom phage was administered received from 8 to 12 cc. by mouth; the rectal route was employed only occasionally. For thirty-one phage-treated cases the average period elapsing before normal stools were obtained was nine days; among forty controls the corresponding figure was 19.1 days. The phage-treated patients were bacteria free in some 7.6 days, while the controls averaged 12.5 days. Phage treatment appeared to have no influence on the duration of the febrile period. Seidlmayer concludes that phage therapy is well worth while and that it should be used along with dietetic measures in treating bacillary dysentery. Mikeladzé and his co-workers[68] observed the effects of orally administered phage on the course of bacillary dysentery. In a group of twenty-one patients 13 per cent had complications and there was a mortality of 4.8 per cent as compared with 56 per cent of complications and a 15.6 per cent mortality in a control group numbering sixty-three patients, all of whom received symptomatic treatment. These authors feel that the early use of phage in bacillary dysentery

59. Applebaum, Martha, and Patterson, M. B.: Effect of Bile on Bacteriophage Phenomenon, J. Infect. Dis. **58**: 195-203 (March-April) 1936.
60. Seidlmayer, Hubert: Die Behandlung der Ruhr im Kindesalter mit Bakteriophagen, Ztschr. f. Kinderh. **60**: 579-589, 1939.
61. Vaill, Sylvia, and Morton, Gladys L.: Bacteriophage Therapy of Bacillary Dysentery, J. Lab. & Clin. Med. **22**: 594-600 (March) 1937.
62. Feemster, R. F.: Use of Bacteriophage in Diagnosis of Bacillary Dysentery, J. Infect. Dis. **55**: 190-194 (Sept.-Oct.) 1934.
63. Mackie, T. T.: The Diagnostic Significance of Antidysentery Bacteriophage, Am. J. Digest. Dis. & Nutrition **3**: 673-677 (Nov.) 1936.
64. Compton, A.: Bacteriophage in Bacillary Dysentery, Lancet **2**: 918 (Oct. 15) 1938.
65. Murray, J. E.: Treatment of Bacillary Dysentery with Bacteriophage, Practitioner **141**: 199-201 (Aug.) 1938
66. Melnik, M. I.; Nikhinson, I. M., and Khastovitch, R. I.: Prevention of Dysentery by Means of Bacteriophage, Ann. Bull. Metchnikov Inst. **1**: 89-96, 1935.
67. Haler, David: Use of Bacteriophage in Outbreak of Institutional Dysentery, Brit. M. J. **2**: 698-700 (Oct. 1) 1938.
68. Mikeladzé, C.; Memsadzé, E.; Alexidzé, N., and Assanichvili, T.: Sur le traitement de la fièvre typhoide et des colites aiguës par le bactériophage de d'Hérelle, Médecine (supp.) **17**: 33-38 (June) 1936.

aborts the disease and that when it is used late one still can expect amelioration of symptoms and reduced mortality.

Even if the best of statistics are accepted, the long period of time elapsing before improvement is noted would indicate that actual lytic destruction of bacteria by phage plays no role in recovery from bacillary dysentery. If it did, one might reasonably expect prompt extinction of the incitant and an early restitutio ad integrum. As it is, an average of from nine to fifteen days is required to render the patients symptom free. This would coincide better with the time element involved in certain of the host immune reactions already considered (fig. 3).

Phage therapy in typhoid or paratyphoid fever has not been an unequivocal success. To quote the earlier experience as analyzed by Eaton and Bayne-Jones,[1] "This brief summary of some of the literature on the treatment of typhoid with bacteriophage indicates that this agent has, apparently, no striking effect on the course of the disease except perhaps on the production of reactions followed by temporary relief. Especially is this the case in patients treated by injection of the lytic agent." We have not found anything in the recent literature to suggest that this is an understatement of the case for phage. Peragallo and Scuti,[69] for example, noted that the appearance of antityphoid phage in the natural course of typhoid is most irregular and has no direct bearing on the patient's recovery. However, phage therapy in their hands usually lessened the duration of the illness and reduced the temperature. They gave 2 cc. amounts of phage intramuscularly and 10 cc. by mouth to seven patients and report that with two exceptions they showed general improvement when compared with four untreated controls. One of the patients to whom phage was given died, and another failed to respond objectively or subjectively. These data do not furnish a particularly weighty argument for the value of phage therapy especially when compared with some of the results reported following the use of typhoid vaccine. In the series of Gay and Chickering [70] fifty-three patients suffering from typhoid were given intravenous injections of a sensitized typhoid vaccine. Approximately one third of these patients experienced a precipitate fall of temperature and a striking remission of symptoms; to all intents and purposes the disease was aborted. Another third of the patients showed distinct improvement after each of several injections, but the benefits were not permanent; the rest remained completely unaffected by the treatment. The careful use of ordinary unsensitized typhoid vaccine will accomplish just as much (Fairley [71]). While individual case reports in some of the phage studies are very impressive, so are the records of many of the vaccine treated patients, and, in our opinion, the statistical evidence in the latter group is considerably better than that collected for phage therapy.

Much of the earlier activity in the field of phage therapy was stimulated by d'Herelle's report [72] of the dramatic results obtained in the treatment and prophylaxis of cholera. He stated that the simple administration of phage by mouth to patients who had the disease reduced the mortality from 62 per cent to 8 per cent, while the addition of phage to wells in cholera areas served effectively as a prophylactic measure and sufficed to terminate the epidemics. These therapeutic and prophylactic procedures are corollaries to d'Herelle's major thesis, namely that all natural recovery from disease is brought about either by the adaptation of ubiquitous phages to the pathogen in question or by the acquisition of an active phage from the external environment. In cholera the theory dictates that the convalescent patient already has effected the necessary adaptation and henceforth, under the primitive sanitary conditions obtaining in cholera areas, serves as a disseminator of the means of recovery.

There is reason to doubt that the major factor in the natural history of epidemics, cholera or other diseases, is the spontaneous appearance and spread of active phages in the population at risk. Both the previously summarized data on bacillary dysentery and numerous reports on cholera point in this direction, e. g. the work of Taylor, Greval and Thant.[73] These authors were able to recover anticholera phage only occasionally from the stools of cholera convalescents; they consider, therefore, that recovery is independent of phage action. Doorenbos [74] quotes some interesting figures on the reduction of the case mortality rates during epidemics in several areas. He concludes that the waning of an epidemic is contingent on at least two other factors besides distribution of phage; first, the gradual immunization of the population by natural vaccination and, second, the diminution in the virulence and toxogenicity of Vibrio comma. Morison and his co-workers [75] attach more importance to phage distribution. In Indian locations studied by them while epidemics were in progress it was observed that the usual drop in case mortality occurred in one zone where conditions promoted the natural spread of phage but not in another where existing circumstances were unfavorable to phage distribution. This may be termed suggestive evidence but is hardly more than that. As far as we have been able to determine, the literature to date contains no scientifically acceptable proof that the recovery of the individual or the decline of an epidemic is dependent on the appearance and distribution of an anticholera phage.

Morison [76] and his co-workers have conducted careful and extensive field studies in India on the prophylactic and therapeutic value of phage in cholera. Only an outline of their most significant experiments, supervised from the Pasteur Institute at Shillong, Assam, can be presented here. The Nowgong district of 3,898 square miles with a population of some 563,000 had been subject to regular epidemics of cholera. The triennial death rate from the disease for the period 1919 to 1929 was 39.2 per 10,000. In 1929, during an outbreak, phage was distributed and within twenty-four hours a decided change for the better in the course of the epidemic was noted. Subsequently dysentery-cholera phage was made available for all cases of diarrhea with the result that the area has been cholera

69. Peragallo, I., and Scuti, R.: Klinische Beobachtungen und experimentelle Untersuchungen über die bakteriophagische Therapie des Typhus, Deutsches Arch. f. klin. Med. **179:** 286-291, 1936.

70. Gay, F. P., and Chickering, H. T.: Treatment of Typhoid Fever by Intravenous Injections of Polyvalent Sensitized Typhoid Vaccine Sediment, Arch. Int. Med. **17:** 303 (Feb.) 1916.

71. Fairley, K. D.: Preliminary Report on Treatment of Typhoid Fever with Intravenous Vaccines, M. J. Australia **2:** 428 (Nov. 12) 1921; Treatment of Typhoid Fever by Intravenous Vaccines, ibid. **2:** 291-302 (Sept. 22) 1923.

72. The d'Herelle Bacteriophage in the Treatment of Cholera, Foreign Letters (Paris), J. A. M. A. **90:** 783-784 (March 10) 1928.

73. Taylor, J.; Greval, S. D. S., and Thant, U.: Bacteriophage in Bacillary Dysentery and Cholera, Indian J. M. Research **18:** 117-136 (July) 1930.

74. Doorenbos, W.: Le choléra; conceptions nouvelles sur les principes fondamentaux de l'épidémiologie et de la prophylaxie du choléra, Rev. d'hyg. **59:** 22-50 (Jan.) 1937.

75. Morison, J.; Rice, E. M., and Polchoridbury, R. K.: Bacteriophage in Treatment and Prevention of Cholera: Summary, Indian J. M. Research **21:** 855-857 (April) 1934.

76. Morison, J.: Bacteriophage in Cholera, Tr. Roy. Soc. Trop. Med. & Hyg. **28:** 563-570 (April) 1935.

free for five years (ten epidemic seasons) although severe cholera has developed in three adjacent districts. In one of these, the southern control district of Habiganj, phage was dispensed during 1932 while the surrounding territories were supplied with cholera vaccine. In September 1932 severe cholera flared up in the latter district but not in Habiganj. At a later date three small Habiganj village outbreaks appeared, all of which lasted a very short time.

These observations are certainly suggestive and warrant continuation of the prophylactic program despite objections based on less favorable results and on the notorious capriciousness of cholera. Raynal[77] has reviewed the Indian cholera experience and concludes that the prophylactic value of phage remains to be demonstrated. Omar[78] is not overenthusiastic about phage prophylaxis but believes that it has a tendency to reduce the case mortality rate.

The application of phage to the treatment of cholera has been undertaken on a large scale. Here again Morison and his colleagues[79] have accumulated data that cannot be lightly dismissed. Two extensive epidemics in the Assam Valley district of India were studied. In the first, 1,032 phage-treated patients had a mortality rate of 22.6 per cent as compared with a rate of 56.6 per cent among 2,411 controls. In the second, the corresponding figures were 21 per cent mortality for the phage-treated patients, 70 per cent for 958 untreated controls. In Morison's opinion the patients receiving phage were definitely less infective. He states that under ordinary circumstances 100 households of six persons each having one case per house can be expected to provide fifty-eight secondary cases. If phage is given in the primary cases, the secondary cases will be reduced to eighteen.

Pasricha and his co-workers[80] have conducted a careful experimental inquiry into the value of phage therapy. Of 1,369 cholera patients admitted to hospital during the year ending July 1935, 684 were given phage in addition to the usual hospital routine and 685 received the latter treatment alone. The two groups were made up of alternate admissions with no selection as to age, severity or other factors. Taken as a whole, the phage-treated patients, who were given 2.0 cc. of cholera phage every four hours, had a slightly lower gross mortality rate than the control patients, but the difference was not statistically significant. When the data are analyzed, a somewhat more encouraging picture is presented. Of 398 bacteriologically positive phage-treated patients, 85 per cent passed agglutinable organisms. The mortality in this selected group was only 8.3 per cent in contrast to a mortality rate of 20.6 per cent among 369 patients who passed agglutinable vibrios but received no phage. For some unknown reason the phage treatment of patients infected within inagglutinable strains of Vibrio comma gave unfavorable results. Of sixty-one such cases phage therapy was attended by a mortality rate of 8.2 per cent as compared with a figure of 4.7 per cent among seventy-four controls. The authors state that the phage-treated patients have less toxemia, are not as dehydrated, show a lower incidence of complications and shed vibrios for a shorter period than the untreated controls.

77. Raynal, J.: Rapport de mission aux Indes Anglaises relative à l'étude des bactériophages appliqués à la prévention du choléra (août-septembre 1933), Arch. Inst. Pasteur d'indochine **6:** 77-126 (April) 1935.

78. Omar, Wasfy: Bacteriophage in the Treatment and Prophylaxis of Cholera, J. Egypt. M. A. **21:** 491-501 (Aug.) 1938.

79. Morison, Rice and Polchoridbury.[78] Morison.[76]

80. Pasricha, C. L.; de Monte, A. J. H., and O'Flynn, E. G.: Bacteriophage in Treatment of Cholera, Indian M. Gaz. **71:** 61 (Feb.) 1936.

In the light of the data accruing from the work of Morison and his assistants under field conditions in the villages of Assam, and from the hospital observations of Pasricha and his collaborators, it is apparent that the use of anticholera phage prophylactically and therapeutically deserves further trial. Certainly the earlier negative results of Taylor, Greval and Thant,[73] Souchard[81] and others should not be permitted to stand in the way of thoroughgoing clinical tests, and just as certainly the work should be carried out under the most rigorously controlled conditions.

2. Pyodermias, Bacteremias and Other Suppurative Conditions.—(*a*) Pyodermias: The treatment of the pyodermias constitutes one of the early extensions of phage theory to actual clinical practice, and the medical periodicals from 1921 up to the present time contain numerous accounts of the successes observed (Bruynoghe and Maisin,[82] Gratia,[83] Gougerot and Peyre[84] and others). American authors as well as French have reported favorably on the use of phage in treating boils, general furunculosis and carbuncles. For example, Stout[85] summarizes the results in some 1,500 cases as follows:

A. In simple boils, 85 per cent of successes.
B. In generalized furunculosis, 75 per cent of successes.
C. In chronic furunculosis, 60 per cent of successes.
D. In carbuncles, irregular results.

Cipollaro and Sheplar[86] found phage therapy satisfactory in forty-eight (78 per cent) of sixty-two patients suffering from furunculosis and in all of five cases of carbuncles. Rice[87] has collected data on sixty-six patients with boils and carbuncles to whom phage was administered; excellent results followed in fifty-five (83 per cent). In connection with staphylococcus phage preparations released through the Michigan Department of Health for the treatment of furunculosis, Larkum[88] reports on a total of 208 cases. In 78 per cent no further lesions developed up to a minimum of six months after treatment was completed and definite recurrences were noted in 19 per cent, although more than half of them were classified as mild. The results of another series[89] reported by several physicians are given in table 1.

More recent work reveals the same trend. Freund[90] considers phage of great value in aborting furuncles of the external auditory canal when applied early enough. He states that 98 per cent of these lesions can be resolved by either topical application or hypodermic injection of phage. Lampert, Boyce and McFetridge[91] conclude that a large factor in the efficacious

81. Souchard, L.: Essais thérapeutiques du choléra par le bactériophage de d'Herelle, Ann. Inst. Pasteur **44:** 125-140 (Feb.) 1930.

82. Bruynoghe, R., and Maisin, J.: Essais de thérapeutique au moyen du bactériophage, Compt. rend. Soc. de biol. **85:** 1120-1121, 1921.

83. Gratia, A.: La lyse transmissible du staphylocoque. Sa production; ses applications thérapeutiques, Compt. rend. Soc. be biol. **86:** 276-278, 1922.

84. Gougerot, H., and Peyre, E.: Essai de traitement par le bactériophage dans les infections cutanées, Compt. rend. Soc. de biol. **91:** 452-453, 1924.

85. Stout, B. F.: Bacteriophage Therapy, Texas State J. Med. **29:** 205-209 (July) 1933.

86. Cipollaro, A. C., and Sheplar, Adele E.: Therapeutic Uses of Bacteriophage in Pyodermias, Arch. Dermat. & Syph. **25:** 280-293 (Feb.) 1932.

87. Rice, T. B.: Use of Bacteriophage Filtrates in Treatment of Suppurative Conditions: Report of Three Hundred Cases, Am. J. M. Sc. **179:** 345-360 (March) 1930.

88. Larkum, N. W.: Bacteriophage Treatment of Staphylococcus Infections, J. Infect. Dis. **45:** 34-41 (July) 1929.

89. Schultz, E. W.: Bacteriophage: Possible Therapeutic Aid in Dental Infections, J. Dent. Research **12:** 295-310 (April) 1932.

90. Freund, E. M.: Bacteriophage in Treatment of Furunculosis of External Auditory Canal, Laryngoscope **46:** 419-426 (June) 1936.

91. Lampert, R.; Boyce, F. F., and McFetridge, E. M.: Bacteriophage Therapy, Am. J. Surg. **29:** 436-443 (Sept.) 1935.

use of phage is the daily application of generous amounts directly to the infected tissues. They obtained good end results in more than 90 per cent of 1,000 cases. Marion [92] believes that a primary indication for the use of phage is the existence of large carbuncles and facial pyodermias and that, properly applied, phage therapy is the best measure available for their treatment. Steinmann [93] has successfully treated two cases of nasal furunculosis, complicated by extension toward the cavernous sinuses, with partially purified phage which he injected into the carotid arteries. The amounts used for each injection varied from 3 to 20 cc.; rapid cures were obtained in both cases. Eisfelder [94] used injections of phage and direct application of phage-soaked packs in treating furunculosis. He reports his observations in 378 cases, of which 134 were classified as multiple furunculosis. In his experience phage therapy can be relied on to clear up sties and simple boils within one to three days, often after a single application. Thirteen of his patients who had carbuncles of the upper lip recovered. Raiga [95] holds that phage therapy of staphylococcic infections is to be preferred to other means at our disposal because it represents the way nature effects a cure. He cites 2,759 cases of staphylococcic infection including 685 facial lesions, 1,968 boils and carbuncles elsewhere in the body and 106 instances of septicemia and osteomyelitis. While there is a lack of detailed information in his paper, it is interesting that the gross mortality rate for the entire group was 1.3 per cent and for the patients with facial lesions only 1.4 per cent.

Montant and Guinchard [96] have injected partially purified phage solutions directly into the brachial artery for the treatment of fourteen patients with hand lesions. They noted prompt alleviation of pain, improvement of lymphangitis and adenitis and a notable reduction in the duration of illness.

While some observers [97] have been well satisfied with the phage therapy of acne, others [85] have reported unfavorably. In one series [89] only fifteen of twenty-nine patients with acne received benefit (52 per cent). The same difference of opinion obtains with respect to sycosis. Stout [85] rarely noted improvement following the use of phage in treating this condition, and Cipollaro and Sheplar [86] report indifferent results in twenty-eight cases. On the other hand, Bruynoghe and Maisin [82] and Gougerot and Peyre [84] were gratified with the results they have obtained following the repeated application of phage directly to the sycotic areas.

Despite the admitted difficulty of setting up adequate control groups, it is regrettable that this has not been attempted in the studies summarized. The great majority of staphylococcic lesions are self limited, and for this reason it is hard to determine an exact measure of efficiency for any therapeutic agent employed. It must be kept in mind that fully as good and in some instances better results with vaccines and toxoids have been recorded. As a case in point there follow the data of Whitby,[98] who used injections of staphylococcus toxoid in treating patients suffering from various types of staphylococcic infections. Of 183 patients with boils, sties and carbuncles 133 (73 per cent) were cured and subsequently had no recurrences. Twenty per cent of the entire group were improved initially but later had recurrences, while only 7 per cent failed to respond. The same sort of results have been reported in work with staphylococcus vaccines.[99]

It seems probable that the host response evoked by the injection of staphylococcus phage can be attributed to the specific and nonspecific immunizing fractions of the crude lysate (see section 2) and on this basis one might anticipate precisely what the available evidence indicates, namely that phage possesses no measurable degree of therapeutic superiority over properly prepared vaccines and toxoid. Its value when applied topically to pyodermias, infected wounds and so on is almost certainly not due to direct lytic destruction of bacteria but resides in the stimulus supplied to the local immune mechanism by the complex materials of the lysed cell suspension. As a matter of fact, a certain amount of this action is independent of either phage itself or bacterial derivatives, for it is known that broth alone can produce a pronounced rise in local tissue resistance (Gratia [56]).

In connection with the general problem of phage administration there is reason to invoke the old dictum

TABLE 1.—*Results in a Series Reported by Several Physicians*

No. of Cases	Type of Infection	Benefited	
		Number	Per Cent
63.....	Furunculosis	44	70
16.....	Carbuncle	14	88

"primum non nocere." Although it is commonly believed that if phage sometimes does no good it at least can do no harm, reactions ranging from mild to severe were observed in 43 per cent of Larkum's patients receiving injections of phage [88] and in the majority of patients seen by Cipollaro and Sheplar [86] and by Bagley and Keller.[100] Very marked local reactions at times follow the use of phage instillations or wet dressings (Bruynoghe and Maisin,[82] McKinley,[101] Gougerot and Peyre [84]) and distressing systemic upsets have been noted after oral ingestion of phage (Violle and Roure [102]). Gowen [36] feels that phage applications in the treatment of facial furunculosis are responsible for exacerbations which eventually terminate favorably. Well controlled experimental studies suggest that a fair percentage of the reactions are due to the elaboration of either toxin (King, Boyd and Conlin [51]) or the Reynal spreading factor in the course of lysate preparation.

Altogether one gains the impression from the literature to date that staphylococcus phage preparations carefully prepared and intelligently used for systemic or local immunization in the conditions mentioned are

92. Marion, J.: Principes, indications et résultats du traitement des furoncles et anthrax par le bactériophage, Lyon méd. **158:** 2-10 (July 5) 1936.

93. Steinmann, J.: Injections de bactériophage intra carotidien pour le traitement des furoncles du nez avec début d'extension vers le sinus caverneux, Schweiz. med. Wchnschr. **67:** 1189-1190 (Dec. 11) 1937.

94. Eisfelder, H. W.: Treatment of Furunculosis with Bacteriophage, J. Am. Inst. Homeopathy **31:** 604, 1938.

95. Raiga, A.: A propos du traitement du furoncle et de l'avenir du bactériophage, Progrès méd., Nov. 27, 1937, pp. 1673-1682.

96. Montant, R., and Guinchard, P.: Le bactériophage en injections intra-artérielles, Gaz. d. hôp. **110:** 1533-1535 (Dec. 1) 1937.

97. Kahn, B. L.: Bacteriophage Therapy for Pyodermia: Report of Twenty Cases, Arch. Dermat. & Syph. **24:** 218-227 (Aug.) 1931. Alderson, H. E.: Bacteriophage in Pyogenic Infections of Skin, Arch. Dermat. & Syph. **21:** 197-205 (Feb.) 1930.

98. Whitby, L. E. H.: Treatment of Staphylococcic Skin Lesions with Toxoid, Lancet **1:** 1454 (June 27) 1936.

99. Wright, A. E.: Studies on Immunization, London, Archibald Constable & Co., Ltd., 1909.

100. Bagley, E. C., and Keller, Margaret: Bacteriophage in Treatment of Osteomyelitis: Study of Ten Cases Including Three Cases Complicated by Staphylococcus Aureus Septicemia, Minnesota Med. **15:** 597-601 (Sept.) 1932.

101. McKinley, E. B.: The Bacteriophage in the Treatment of Infections, Arch. Int. Med. **32:** 899-910 (Dec.) 1923.

102. Violle, H., and Roure, M. C.: Quelques essais de traitement de la fièvre typhoide par le bactériophage, Presse méd. **33:** 1236 (Sept. 16) 1925.

useful therapeutic agents with about the same indications for clinical application as staphylococcus vaccines and toxoid.

(*b*) Bacteremias: Invasion of the blood stream by staphylococci is recognized as a grave condition carrying a general mortality variously estimated at between 60 and 80 per cent. In the treatment of this condition by means of phage injections there have been several interesting clinical series. Dutton [103] had a case mortality of only 8.3 per cent in a group of twelve patients, although five of them may not have had true septicemia. If these five questionable cases are disregarded the mortality still is low (14.3 per cent). MacNeal and Frisbee [104] lost eight of fifteen patients (53 per cent) who were given intravenous injections of specially prepared phage at short intervals. Since then MacNeal and several of his colleagues [105] have had a more extensive experience. He uses an intensive dosage program, injecting phage around any local lesions every twenty-four to forty-eight hours and giving from 100 to 300 cc. of phage intravenously in divided doses until a shock reaction is produced. For from two to three days after the shock smaller intravenous doses are given twice a day. In a series of 100 cases the resultant case mortality was 75 per cent. MacNeal and Frisbee feel that intravenous administration of phage definitely benefits cases of staphylococcic septicemia chiefly through promoting phagocytosis and not by direct lytic action. Longacre, Jern and Meleney [106] have recently reported their results with the phage treatment of thirty-six cases of Staphylococcus aureus septicemia. Fifteen of their earlier patients were not given large amounts of phage and the mortality in this group was 73.3 per cent. The last twenty-one patients received what the authors consider to be adequate dosage and as a consequence the case fatality rate dropped to 28.5 per cent. For the whole group of thirty-six phage-treated patients the mortality was 47.2 per cent, while among fifty-four controls 81.4 per cent died. Longacre and his co-workers recommend the use of large amounts of phage as early as possible in the course of the disease. Others have observed as good results in smaller clinical series (Bréhant,[107] Sauvé [108] and Gilbert [109]).

It is difficult to reconcile the enormous variation in phage dosage recommended by different investigators with the remarkably uniform end results. American investigators are practically unanimous in counseling the intravenous injection of from twenty to thirty times the amounts used by the French. The one element common to the two schools appears to be the regular induction of shock, and it may well be that this reaction coupled with stimulation of phagocytosis (see section 2) constitutes the essential mechanism at work here. Certainly it is not lysis of blood borne bacteria.

The best of the phage statistics relating to staphylococcic bacteremia are not superior to those obtained with other therapeutic measures. During the past two years nine patients with proved staphylococcus invasion of the blood stream were seen in the service of Dr. Robert Sutherland at Cowell Memorial Hospital, University of California. They were treated with intravenous injection of large amounts of staphylococcus antitoxin and the intramuscular injection of citrated whole blood obtained from donors previously subjected to intensive immunization with staphylococcus undenatured bacterial antigen (Krueger and Fuendeling [110]). The mortality was 11 per cent. In another similar group occurring in the practice of several different physicians and comprising sixty-one cases, immune whole blood alone or immune blood plus antitoxin was employed with 18 per cent mortality. The chemotherapeutic approach to the problem likewise has been fruitful, as is evidenced by a reduction in the general mortality from an expected average of 70 per cent to less than 30 (Herrell and Brown [111]).

As we see it, the acceptance of phage therapy as a routine procedure in the treatment of staphylococcic bacteremia should wait on the establishment of a greater body of adequate data. The completely negative results attending the use of phage in experimental septicemia under the most favorable conditions and the uncertain rationale as compared with that demonstrated for each of several other procedures (e. g. administration of antitoxin, blood from immunized donors, chemotherapeutic agents) warrant the conclusion that, as yet, phage therapy is not a method of choice.

(*c*) Various Suppurative Conditions: Reports on the application of phage therapy to the treatment of various suppurative conditions besides those already considered are numerous, but the great body of this material consists of isolated observations and small clinical series from which conclusions have been drawn without the benefit of either control groups or sufficient bacteriologic data. Although the general tone of the published results is favorable and occasionally enthusiastic, it is not sufficient to offset a serious lack of acceptable scientific evidence. In submitting the following summaries of some of these papers, it is our conviction that they represent interesting clinical experiences rather than rigorous proof establishing phage therapy as a chosen procedure; they indicate clearly the direction future work should take if satisfactory data are to be accumulated.

Boyce, Lampert and McFetridge [112] have used phage in the treatment of approximately 1,000 patients with wound infections, abscesses, cellulitis, furuncles and carbuncles. Their record of 90 per cent of successes, they believe, is due to the continuous application of large amounts of phage directly to the infected tissues. Schultz [89] noted that 47 per cent of seventeen wound infections were improved by phage, while Rice [87] obtained excellent results in 91 per cent of forty-four cases. Dutton,[103] McKinley [101] and MacNeal [113] report much the same sort of experience.

Rice,[87] Rixford [114] and Ruddell, Sicks and Loomis [115] employed phage for the treatment of peritonitis and

103. Dutton, L. O.: Therapeutic Use of Bacteriophage with Special Reference to Staphylococcus Septicemia, Southwest. Med. **17:** 374-379 (Nov.) 1933.

104. MacNeal, W. J., and Frisbee, F. C.: Bacteriophage as a Therapeutic Agent in Staphylococcus Bacteremia, J. A. M. A. **99:** 1150-1155 (Oct.) 1932.

105. MacNeal, W. J., and Frisbee, F. C.: Bacteriophage Service to Patients with Staphylococcus Septicemia, Am. J. M. Sc. **191:** 170-178 (Feb.) 1936. MacNeal, W. J.: Therapeutic Use of Bacteriophages, Particularly in Sepsis, New York State J. Med. **39:** 451-460 (March 1) 1939.

106. Longacre, A. B.: Zaytseff-Jern, Helen, and Meleney, F. L.: Treatment of Staphylococcic Septicemia with Bacteriophage, Surg., Gynec. & Obst. **70:** 1 (Jan.) 1940.

107. Bréhant, J.: Septicopyohémie à staphylocoque doré, Bacteriophage intraveineux, Mém. acad. de chir. **62:** 1110-1111 (Oct. 14) 1936.

108. Sauvé, L.: Le bactériophage in chirurgie, Médecine (supp.) **17:** 49-54 (June) 1936.

109. Gilbert, W. M.: Septicemia: Treatment with Bacteriophage, J. M. A. Georgia **27:** 115-158 (April) 1938.

110. Krueger, A. P., and Fuendeling, M. J.: The Use of Whole Blood from Immunized Donors in the Treatment of Acute Infections, Urol. & Cutan. Rev. **44:** 367-370 (June) 1940.

111. Herrell, W. E., and Brown, A. E.: The Treatment of Septicemia, J. A. M. A., to be published.

112. Boyce, Lampert and McFetridge.[124] Lampert, Boyce and McFetridge.[91]

113. MacNeal, W. J.: Uses of Bacteriophages in Wound Infections and in Bacteremias, Am. J. M. Sc. **184:** 805-810 (Dec.) 1932.

114. Rixford, Emmet: Bacteriophage in Surgery of Colon and Rectum, Ann. Surg. **94:** 640-647 (Oct.) 1931.

115. Ruddell, K. R.; Sicks, O. W., and Loomis, N. S.: Observations on Use of Bacterial Lysates in Surgical Cases, Am. J. Surg. **22:** 337-342 (Nov.) 1933.

appendical abscess. In the series of Ruddell and his co-workers the phage was placed in the peritoneal cavity at the time of operation with a resultant mortality among twenty-seven patients of only 11 per cent. Tsouloukidzé [116] hails phage therapy as "the greatest medical discovery." In five years' experience he observed the clinical courses of forty-seven patients who were operated on for intestinal perforation during typhoid. Of twenty-seven patients treated with surgery alone twenty-four died (mortality 89 per cent); of twenty to whom phage was administered after operation seven died (mortality 35 per cent). King [117] describes a small series of phage-treated cases of peritonitis arising as complications of acute appendicitis. He believes that phage has possibilities in this condition and urges its further investigation.

Morrison and Gardner [118] have reported careful observations on the use of phage in the treatment of a patient with lung abscess following peritonitis. The abscess developed from an infected embolus and was associated with massive collapse of the left lung and empyema. Surgical measures and repeated irrigations with physiologic solution of sodium chloride for five days failed to control the suppurative process. Within twenty-four hours after the instillation of 30 cc. of phage the necrotic character of the infected area was gone and the patient made an uneventful recovery. Moore [119] recommends phage as an adjunct to the general therapy of pulmonary suppuration. Five cc. of mixed staphylococcus-streptococcus phage is instilled into the abscess. Bronchoscopic treatments, vaccine and phage are administered over a long period of time, usually about five months. Thirteen of twenty-three patients were definitely improved by this regimen but it is not possible to evaluate clearly the role played by phage.

Albee [120] subscribes to d'Herelle's concept that the appearance of phage in infected tissues is a major element in the normal process of host recovery. He has found active phages in some 94 per cent of exudates from acute and chronic cases of osteomyelitis and it is his belief that the efficacy of the Orr closed treatment of osteomyelitis resides in the exceptionally favorable conditions afforded for the spontaneous development of phage. The general routine of immobilization and dressing employed by Albee is in keeping with the best of modern nonintervention teaching, but it does not follow that the results observed are due to native phage. We have not been able to isolate phages from the exudates in cases of osteomyelitis with anything like the frequency reported by Albee, nor when phages have occurred could we relate them to the patient's clinical progress. Albee recommends the paraffin-petrolatum tampon in which a catheter is incorporated for the periodic introduction of phage. He also reports the successful use of phage in clearing up a carrier of Eberthella typhi who had positive urine, blood, bile and bone abscess cultures.[121]

While similar favorable results following the use of phage in osteomyelitis have been observed by Larkum,[88] MacNeal [122] and Raiga,[123] other investigators have not received such a good impression. For example, Boyce, Lampert and McFetridge [124] could not discern any striking effect due to phage which had been administered to ten patients with osteomyelitis. Bagley and Keller [100] found that no improvement ensued when phage dressings were applied to three of their patients with bone lesions caused by organisms other than the staphylococcus. Despite the local and systemic administration of phage to three other patients who presented septicemic complications, two died. Of four patients with uncomplicated staphylococcic osteomyelitis three recovered and one died. Rice [87] obtained excellent results in four of eleven cases of osteomyelitis treated with phage but he is not enthusiastic about its use in this field.

Stout [85] records the recovery of two patients suffering from staphylococcic meningitis after the use of phage. Schless [125] gives a more detailed account of a similar case in which staphylococci were isolated from the spinal fluid on three successive days; during this time the blood culture remained negative. Within twenty-four hours after the intrathecal injection of phage the spinal fluid became sterile and the clinical picture improved. Frank [126] used phage intravenously early in the treatment of a case of staphylococcic meningitis complicated by septicemia. Later in the course of the disease the phage was given intraspinally but the patient failed to respond and finally died.

TABLE 2.—*Schreuder's Results*

	Definitely Improved	Slightly Improved	Unimproved
29 phage-treated cases..	34.5%	31.0%	34.5%
31 saline-treated cases..	52.0%	32.0%	16.0%

Although phage has been used on a fairly large scale in the treatment of acute respiratory infections there is no evidence to show that it has any real influence on their clinical course. In 1933 Schreuder [127] gave injections of phage to 169 patients presenting symptoms of the common cold. All had acquired the infection within a forty-eight hour period prior to treatment and each patient received injections of phage on three successive days. Thirty-nine per cent were definitely improved, 38 per cent noted slight benefit and 23 per cent were unimproved. In order to extend these observations, Schreuder conducted a similar experiment during the winter of 1934-1935 but this time included a control group, the members of which received injections of saline solution instead of phage. The results are summarized in table 2. Schreuder concludes that the subcutaneous injection of phage is of no demonstrable value in acute colds.

116. Tsouloukidzé, A.: Sur l'application du bactériophage dans la péritonite par perforation au cours de la fièvre typhoïde, Médecine (supp.) **17:** 41-42 (June) 1936.

117. King, H. J.: Acute Appendicitis: Comparative Survey with Remarks on Its Management, Am. J. Surg. **37:** 40-56 (July) 1937.

118. Morrison, Samuel, and Gardner, R. E.: The Treatment of a Lung Abscess Due to Bacillus Coli with a Lytic Filtrate, J. A. M. A. **107:** 33-34 (July 4) 1936.

119. Moore, W. F.: Bronchoscopic Treatment of Pulmonary Suppuration with Special Reference to Use of Polyvalent Stock Bacteriophage, Pennsylvania M. J. **41:** 272-274 (Jan.) 1938.

120. Albee, F. H.: Will Bacteriophage Prove Ideal Wound Treatment? Am. J. Surg. **15:** 228-236 (Feb.) 1932; Treatment of Osteomyelitis and Septicemia by Bacteriophage, Rocky Mountain M. J. **35:** 43-46 (Jan.) 1938.

121. Albee, F. H.; Hoskins, W. H., and Collins, C.: Bacteriophage Treatment of Typhoid Fever Carrier with Bone Abscess, Am. J. Surg. **33:** 317-320 (Aug.) 1936.

122. MacNeal, W. J.: Bacteriophages as Help in Treatment of Infections in Children, New York State J. Med. **31:** 1383-1386 (Nov. 15) 1931; Infectious Organisms in Osteomyelitis: Bacteriophage and Serum Therapy, J. Bone & Joint Surg. **19:** 891-903 (Oct.) 1937.

123. Raiga, A.: Guérison par la phagotherapie d'une ostéomyélite aiguë continuant à evolver malgré trois opérations successives, Bull. et. mém. Soc. d. chirurgiens de Paris **29:** 42-56 (Jan. 8) 1937.

124. Boyce, F. F.; Lampert, R., and McFetridge, E. M.: Bacteriophagy in Treatment of Infections of Superficial and Deep Tissues with Report of Two Hundred Cases, New Orleans M. & S. J. **86:** 158-165 (Sept.) 1933.

125. Schless, R. A.: Staphylococcus Aureus Meningitis: Treatment with Specific Bacteriophage, Am. J. Dis. Child. **44:** 813-822 (Oct.) 1932.

126. Frank, D. E.: Staphylococcic Meningitis Treated with Autogenous Bacteriophage, J. M. Soc. New Jersey **33:** 466-471 (Aug.) 1936.

127. Schreuder, O. B.: Treatment of Acute Colds with Bacteriophage: Lysed Bacterial Antigen, Mil. Surgeon **78:** 211-216 (March) 1936.

Ruskin [128] states that he has found phage therapy helpful in cases of recurrent acute nasal infection, but practically continuous treatment was required to produce any benefit. For the phage treatment of sinusitis he stresses the necessity of avoiding chemical antiseptics and recommends the topical use of large amounts of phage. Hosen and Signorelli [129] believe that the administration of phage-lysed suspensions of the common respiratory invaders during the early stages of the common cold will serve to prevent many of the complications such as chronic sinusitis or bronchitis. Halphen[130] has not obtained good results with phage in treating chronic maxillary sinusitis, otitis media or chronic mastoiditis but considers it valuable for furunculosis of the ear canal, ozena and tonsillar phlegmon.

Dechaume [131] has developed a technic for the application of phage in cases of maxillary osteitis. He states that the results in his hands have been both good and remarkably rapid, but one cannot tell from his paper on what clinical background this opinion is based nor is there evidence of critical comparison with other modes of treatment. Raiga [132] cites fifty-two cases of odontopathic phlegmon in which phage therapy was found to be helpful.

3. *Urinary Tract Infections.*—Theoretically, uncomplicated infections of the urinary tract should offer potentialities for the application of phage therapy. They are usually well localized processes and the tissues involved are readily accessible, so that almost any desired amount of phage can be brought into contact with them. Nevertheless there is little in the published results to suggest that phage therapy has any significant superiority over the common chemotherapeutic approaches (mandelic acid, sulfanilamide and so on).

The optimal procedure for administering phage to patients with urinary tract infections seems to comprise a combination of subcutaneous or intramuscular injection and instillation directly into the bladder or kidney pelves. Zdansky [133] obtained 30 per cent of cures among a total of twenty cases of cystitis in which he administered bladder instillations. Approximately the same percentage of favorable results is reported by Munter and Boenheim [134] following intramuscular injection of phage into thirteen children with cystitis. Cowie [135] used subcutaneous injections alone in treating eleven cases of urinary tract infection. Six acute cases were cured in from three to five days, but only one patient of five with chronic infections showed permanent benefit. Cline [136] successfully treated twelve of fourteen children suffering from pyelitis by means of phage administered subcutaneously.

Dalsace [137] gave phage by the oral, subcutaneous and intramuscular routes to nine patients with staphylococcic infections of the urinary tract and to twelve who had Bacillus coli infections. In the former group six were cured, in the latter only two, although eight others showed some improvement. Wehrbein [138] has found phage helpful in treating superficial genito-urinary infections but of no value in cases of kidney abscess, vesiculitis or prostatitis. Among a group of ten patients who had acute pyelitis seven were cured by a single topical application. The results in chronic pyelitis were less impressive, there being only five cures (21 per cent) among twenty-four cases. This coincides well with the observations of Krueger, Faber and Schultz,[139] who combined bladder instillations and subcutaneous injections for administering phage to thirty-five selected patients with chronic uncomplicated urinary tract infections. Four (11 per cent) were promptly cured; of twenty-five patients (72 per cent) who gradually recovered, the response was not clearly attributable to the phage. Christiansen [140] has reported the same sort of data. Schultz [141] supplied phage to physicians for treatment of urinary tract infections and has analyzed the reports submitted to him. Including both cured and improved patients in one group there were seventy-two favorable responses (48 per cent) out of 151 patients treated. Seventeen of the seventy-two subsequently had recurrences and, if this is allowed for, the favorable results are reduced to fifty-five cases (36 per cent).

While some authors claim to have had considerably better results with phage therapy in chronic urinary tract infections (Frisch,[142] Voss,[143] Michon [144]), the collected statistics in general do not afford convincing evidence of its value. There are several fundamental factors operating against attainment of bacteriophagy in the bladders or kidney pelves of these patients. Under ordinary conditions, phage introduced into the urinary tract is subject to constant dilution, with the result that it may be completely washed out inside of twenty-four hours (Larkum,[145] Zdansky [133]). The diluting menstruum, urine, contains materials such as dead bacteria and tissue débris which actually bind phage and prevent its participation in the reaction with living organisms (see section 2). At times the phage may persist in the urinary tract for months without, however, exerting any appreciable effect on the clinical course of the infection (Caldwell [146]). This is due to the fact that certain strains of bacteria are lysogenic and act as phage carriers but do not themselves undergo massive cellular lysis. In pyelitis or cystitis secondary to kidney abscess, renal tuberculosis, hydronephrosis, ureteral stricture, and so on, there is practically universal agreement that phage therapy is of no permanent value (Hinman,[147] Ravina,[148] Wehrbein [138]). The uncompli-

128. Ruskin, S. L.: Bacteriophage Therapy in Nasal and Aural Diseases, Laryngoscope **46:** 107-111 (Feb.) 1936.

129. Hosen, Harris, and Signorelli, John: Bacteriophage in Respiratory Disease, New Orleans M. & S. J. **89:** 83-86 (Aug.) 1936.

130. Halphen, E.: Le bactériophage en oto-laryngologie, Médecine (supp.) **17:** 60-63 (June) 1936.

131. Dechaume, M.: Traitement des ostéites des maxillaires d'origine dentaire par le bactériophage, Progrès méd., Sept. 19, 1936, pp. 1449-1450.

132. Raiga, A.: La phagothérapie et ses enseignements dans le traitement des phlegmons, odontopathiques, Bull. et mém. Soc. d. chirurgiens de Paris **29:** 349-372 (Oct. 15) 1937.

133. Zdansky, E.: Versuche einer Bakteriophagen therapie bei Koliinfektion der abführenden Harnwege, Wien. Arch. f. inn. Med. **11:** 535-548 (Nov. 1) 1925; abstr. J. A. M. A. **86:** 317 (Jan. 23) 1926.

134. Munter, H., and Boenheim, C.: Ueber therapeutische Versuche mit bakteriophagen Lysin bei Kindern und Säuglingen, Ztschr. f. Kinderh. **39:** 388-394, 1925.

135. Cowie, D. M.: Bacteriophage: Observations of the Bacteriophage (Urinary Infections), Ann. Clin. Med. **5:** 57-77 (July) 1926.

136. Cline, G. M.: Treatment of Pyelitis in Children with B. Coli Bacteriophage, Illinois M. J. **60:** 493-497 (Dec.) 1931.

137. Dalsace, Robert: Le bactériophage de d'Herelles; ses applications en thérapeutique urinaire, Presse méd. **34:** 458 (April 10) 1926.

138. Wehrbein, H. L., and Nerb, Louis: Bacteriophage in Treatment of Urinary Infections, Am. J. Surg. **29:** 48-53 (July) 1935.

139. Krueger, A. P.; Faber, H. K., and Schultz, E. W.: Observations on Bacteriophage in Infections of Urinary Tract, J. Urol. **23:** 397-426 (April) 1930.

140. Christiansen, Harald: Application of Phage in Infection of Urinary Tract, Ugesk. f. læger **92:** 377-404 (April 17) 1930.

141. Schultz, E. W.: Bacteriophage as Therapeutic Agent in Genito-urinary Infections, California & West. Med. **36:** 33 (Jan.); 91 (Feb.) 1932.

142. Frisch, B.: Zur Behandlung der Koliinfektion des Harntraktes mit Bakteriophagen, Wien. klin. Wchnschr. **38:** 839-841 (July 23) 1925.

143. Voss, J. A.: Researches on Bacteriophage and Bacteriophage Therapy, Norsk mag. f. lægevidensk. **90:** 853-877 (Aug.) 1929.

144. Michon, L.: Le traitement des infections urinaries par le bactériophage, Médecine (supp.) **17:** 57-59 (June) 1936.

145. Larkum, N. W.: Bacteriophagy in Urinary Infections: Bacteriophagy in Bladder, J. Bact. **12:** 225-242, 1926.

146. Caldwell, Janet A.: Bacteriophagy in Urinary Infections Following Administration of Bacteriophage Therapeutically, Arch. Int. Med. **41:** 189-197 (Feb.) 1928.

147. Hinman, Frank: Use of Bacteriophage in Urinary Infections, S. Clin. North America **13:** 59-62 (Feb.) 1933.

148. Ravina, A.: Traitement des infections urinaires par le bactériophage de d'Herelle, Presse méd. **34:** 548-549 (May 1) 1926.

cated acute cases which respond best of all to the administration of phage are equally responsive to other therapeutic measures.

Relatively little work has been done with the phage treatment of gonorrhea. In fact it appears that investigators reporting clinical series under this heading have not utilized a true phage. For example, Pelouze and Schofield [149] observed in filtered aqueous extracts made from old cultures of gonococci an agent capable of killing gonococci within five to twenty-four hours. This so-called "gono-phage" failed to produce plaques in agar cultures of gonococci and did not induce the characteristic clearing of gonococcus suspensions. Since its reported properties do not fulfil the criteria established for bacteriophages, the use of the term "gonophage" does not seem justified. Schmidt-La Baume and Fonrobert [150] as well as Balozet and Lepinay [151] have been unable to demonstrate a true phage active against the gonococcus. They found, however, that filtrates of gonococcus cultures regularly contained a growth inhibitor for this organism.

Regardless of the nature of the material studied by Pelouze and Schofield, it was employed in the treatment of forty patients with acute gonorrhea. Some suggestive results were obtained but there was no definite evidence that the course or duration of the disease was influenced. In fact, Pelouze and Schofield have taken pains to point out the very definite limitations of gonophage therapy. More recently Burnet and Salberg [152] have described a disappointing experience with the topical use of gonococcus lysate incorporated in a jelly. Among a group of eighty-eight women suffering from gonorrhea, all of whom received treatments with the lysate, extension of the infection to the pelvic organs occurred in 35 per cent. This represented three times the expected incidence. In 75 per cent of the patients who had such complications the pelvic involvement took place within three weeks, i. e. much earlier than would normally be anticipated. The authors conclude that the lysate somehow altered the local tissue response and thus contributed to upward dissemination of organisms. They are convinced that severe peritoneal irritation is a common accompaniment of the lysate treatment and therefore condemn its use.

SUMMARY AND CONCLUSIONS

1. The nature of bacteriophage is no longer in question. It is a protein of high molecular weight and appears to be formed from a precursor originating within the bacterium. There is evidence that the precursor likewise is a protein and that it is synthesized by the cell during a phase of accelerated metabolic activity. The process by which the inactive precursor is transformed into active phage is catalyzed by phage; i. e., the primary reaction is:

$$\text{Inactive Phage precursor} + \text{Phage} \longrightarrow \text{Phage}$$

2. For all practical purposes phage production proceeds at a significant rate only when the environment permits bacterial growth and concomitant synthesis of precursor. The most prominent phase of bacteriophagy, massive dissolution of the susceptible bacteria, takes place when enough phage has accumulated to raise the phage/bacteria ratio to the critical lytic threshold.

While phage action in vitro is spectacularly effective in bringing about bacterial destruction, bacteriophagy in vivo operates on a much less efficient scale and plays a negligible part in the clinical application of phage. There is no substantial evidence that the spontaneous development of phage in the infected host has any bearing on the process of recovery.

Four alternative mechanisms by means of which lysates conceivably may exert a beneficial therapeutic effect include:

(*a*) Phage-induced dissociation of less virulent variants from the original pathogenic invader.

(*b*) Augmentation of phagocytic efficiency through phage action.

(*c*) Stimulation of specific antibacterial immunity in the host by antigenic fractions of lysed organisms.

(*d*) Activation of specific or nonspecific immune mechanisms of the host by entirely nonspecific elements in the lysate.

The first of these is of little more than possible significance but the last three are unquestionably important and completely outweigh the long overstressed theory that lysis of bacteria in vivo is responsible for the clinical successes of phage therapy.

3. The reported data on the use of phage in various diseases caused by bacteria are for the most part insufficient to establish phage therapy as a method of choice. Only rarely have these studies included an adequate bacteriologic background, control groups or careful comparison with accepted therapeutic procedures. There is evidence, however, that a properly prepared lysate can serve satisfactorily as:

(*a*) A vaccine for the treatment of certain diseases, e. g. some types of staphylococcic lesions.

(*b*) An agent for the induction of nonspecific protein shock in syndromes in which at times such shock may be used to good purpose, e. g. typhoid.

(*c*) A measure for enhancing the general resistance of an infected area when applied topically. This depends on its nonspecific action in mobilizing macrophages and microphages.

It is equally evident that phage solutions possess no measurable degree of superiority over well known and accepted preparations employed for the same purposes; for example, bacterial vaccine and toxoid in carbuncles and furunculosis or typhoid vaccine in nonspecific protein shock therapy. Modern chemotherapeutic approaches to the treatment of a variety of conditions for which phage has been recommended (cystitis, pyelitis, gonorrhea, certain bacteremias) offer more chances of success than does phage.

While it has become almost axiomatic to state that the use of phage is entirely innocuous, we have not found this to be the case. The literature provides numerous accounts of reactions ranging from mild to severe following the injection, local application or ingestion of phage, and animal experimental work has shown that lysates may contain enough soluble toxin or Reynal's spreading factor to be actually dangerous.

4. Although it is admittedly very difficult to arrive at definite conclusions regarding the efficacy of any therapeutic agent used for the treatment of certain diseases, the accumulated clinical data on phage are in some instances highly suggestive and warrant the continuation of further studies under thoroughly controlled conditions. This is particularly true of cholera.

149. Pelouze, P. S., and Schofield, F. S.: The Gonophage: A Laboratory and Clinical Study of the Bacteriophagic Principle Elaborated by the Gonococcus, J. Urol. **17**: 407-438 (April) 1927.

150. Schmidt-La Baume, F., and Fonrobert, H.: Ueber Versuche zur Erzeugung von Bacteriophagen gegen Gonokokken, Zentralbl. f. Bakt. (pt. 1) **112**: 379-381 (June 19) 1929.

151. Balozet, L., and Lepinay, E.: Recherche d'un principe bactériophage contre le gonocoque, J. d'urol. **25**: 357-358 (April) 1928.

152. Burnet, W. M., and Salberg, J. B.: Gonorrhea in Female: Report of Series of Cases Treated with Gonococcus Lysate, Am. J. Syph., Gonor. & Ven. Dis. **21**: 64-71 (Jan.) 1937.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, MAY 17, 1941

THE DIET OF THE AMERICAN SOLDIER

Food is one of the most important single factors in maintaining good morale among soldiers. The rigors of military life, particularly during warfare, tax to the utmost the physical and mental stamina. Recently Lieut. Col. Paul P. Logan,[1] chief of the Subsistence Branch of the Office of the Quartermaster General, has answered fully the query as to how the American soldier is fed.

The composition of the ration, or food which is provided for each soldier daily, may vary considerably depending on circumstances. Thus the diet of men in the field during warfare may be quite different from that of those in garrisons far from the scenes of conflict. The ration of the garrison provides all the constituents of a properly balanced diet and includes among other items a variety of meats, vegetables, fruits and beverages. The rations issued in the field are, of course, influenced by the fact that the food supply lines may be disturbed or interrupted. For this reason extra quantities of nonperishable materials are carried on truck trains which accompany the troops. Each man has, moreover, a reserve of food which he carries as part of his personal equipment. Among field rations there are a number of types. Field ration A, for example, which is issued whenever circumstances permit, conforms closely to the garrison ration and includes such items as fresh meats, bread, butter and possibly fresh fruit and vegetables. Field ration B includes canned meats, evaporated milk, hard bread and similar relatively nonperishable provisions which do not require refrigeration. This ration is intended for use when circumstances, such as failure of transportation, make it impossible to issue the more desirable type A. Type C ration, consisting of six cans of prepared food, is also available for use when conditions prevent the issuance of types A or B. The cans contain different combinations of meat and vegetables, whole milk crackers, cube sugar and a chocolate wafer. This ration may be eaten hot or cold and is carried by the soldier as part of his equipment. A comparatively simple emergency ration, consisting merely of sweetened chocolate bars containing oat flour, has also been designed and is intended for use when all other food supplies are lacking.

While the garrison diet of soldiers may be excellent, the food of men in the field may at times be deficient both in quantity and in quality. Fortunately, as pointed out by Logan, fighting units do not generally remain in the combat zone for a long time. Although it may be difficult to insure a well balanced diet to men in the zone of combat, everything possible is done to feed them adequately under all conditions. Many problems relating to the nutritional adequacy of the diet of the military forces are being intensively studied. No doubt these and the problems relating to certain diets will be considered in the National Nutrition Conference for Defense announced for May 26.

1. Logan, P. P.: How the American Soldier is Fed, J. Am. Dietet. A. **17**: 226 (March) 1941.

CASE FINDING IN TUBERCULOSIS

Basic in the success of public health efforts for the control of tuberculosis is the widespread application of adequate methods for finding active and infectious cases. Important developments in this field promise still further inroads on the morbidity and mortality from this condition, the diminishing death rate of which has been one of the spectacular phenomena of the past generation. Probably tuberculosis, as a major public health menace, could be brought under control by the use of knowledge and technics now at hand.

The methods now in use for detecting tuberculosis are varied. The procedure may start with a complete physical examination, followed by a tuberculin test. If any indication of the disease is found, a roentgenogram of the chest is made. In some places mass examinations are conducted which include the taking of a full sized roentgenogram of every person examined. Sometimes all other procedures are omitted on the first examination.[1] Such extremes in technic are under attack, the first as being cumbersome and ineffective and the second as unnecessarily expensive.

Early tuberculosis rarely causes symptoms and in most cases is not detectable by physical examination. However, physical examination, accompanied by the usual laboratory procedures, must always be made in the evaluation of the disease process, once found or suspected. Case finding involves recognition of the disease among large groups of people with the greatest possible speed and efficiency.

Present day effort centers on a compromise between the extremes of procedure, with the development of effective but relatively inexpensive methods for "screening" large numbers of persons, followed by complete

1. Edwards, Herbert R.: Tuberculosis Case Finding: Studies in Mass Surveys, Am. Rev. Tuberc. (supp.) **41**: 3 (June) 1940.

examination of those found to be positive or suggestive by the screening method used. The time honored screening method is the tuberculin test, which can be applied either with or without physical examination.[2] There seems to be a tendency away from this test,[3] although it is still vigorously defended. For the most part, the modern approach to case finding is by adaptations of the roentgen ray technic to avoid the expense of material and processing for full sized film in every case.

First is application of the fluoroscope.[4] In competent hands this is both highly effective and relatively inexpensive as a means of finding suggestive and positive cases for further examination, and of eliminating negative cases. Second is the miniature roentgenogram,[5] which depends on photographing the fluoroscopic image on a small film. For this purpose both the 35 mm. motion picture film and the 4 by 5 inch film have been used. The former has the advantage of lower cost for material and processing, and the disadvantage that it must be enlarged, ordinarily by projection, for interpretation. The relative merits of the various methods proposed are technical and economic questions to be decided on the basis of further experience.

Efficacy of any case finding program in tuberculosis depends only in part on the technics employed in examination. Behind this is the broader question of the selection of groups for examination and of bringing them under observation. With the change in technics there is a corresponding shift from a passive attitude in case finding, which leaves the initiative in seeking examination to the individual, perhaps encouraged by health education efforts, to more aggressive programs which provide machinery to look for cases where they are presumed to exist. This has led to mass examinations in industries, in schools and colleges, in prisons, among some occupational and racial groups and among pregnant women, and even house to house canvasses. The success of such efforts may be expected to influence to a considerable degree the management of the tuberculosis problems which will arise under recruiting for the defense program.

Bloch and his collaborators[4] have recently made a strong case for centering case finding efforts in out-patient clinics. In their words, "a clinic offers the opportunity to conduct a routine roentgenologic search of the populace without the necessity of solicitation." As a result of their experience they suggest that roentgenologic examination of the chest, which they carried out by means of the fluoroscope, should become a routine procedure in all medical institutions. They draw the analogy with the Wassermann reaction and point out that the returns from routine fluoroscopy, in persons not under suspicion, are at least as great as those from routine serologic tests. A by-product of these examinations, and one which adds weight to the argument in their favor, has been the finding of an unexpected number of cases of disorders in the chest other than tuberculosis.

With the development of new technics in examination and with a more aggressive attitude in the search for active cases of tuberculosis the public health aspects of this disease enter a new phase. One of the first results of the new approach, where it has been applied extensively, is an increase in the incidence of reported cases and in the number of deaths recognized as due to tuberculosis. Another initial effect of efficient case finding is the reversal of the relative proportions of minimal and advanced tuberculosis, the latter having always been predominant among institutionalized patients. The bringing of a larger proportion of the active cases in a community under observation and control will tend, in the long run, to a decrease in the actual incidence and death rate.

2. Myers, J. A.: The Detection of Tuberculous Infection, J. A. M. A. **112**: 1904 (May 13) 1939. Long, E. R.: The Tuberculin Test, Am. Rev. Tuberc. **40**: 607 (Dec.) 1939.
3. Bloch, Robert G.: Case Finding in Tuberculosis, Am. Rev. Tuberc. **63**: 213 (Feb.) 1941. McKneely, T. B.: Evaluation of Tuberculosis Test as Screen in School Case Finding Programs, Tr. Nat. Tuberc. A. **34**: 290, 1938. Knies, P. T.: The Detection of Tuberculosis in Group Surveys, Am. Rev. Tuberc. **39**: 766 (June) 1939. Tice, Frederick: Tuberculin Testing in the Chicago Schools, Bulletin of the City of Chicago Municipal Tuberculosis Sanitarium, **18-19-20**: 7, 1938-1939-1940.
4. Bloch, Robert G.; Francis, Byron F.; Eisele, C. Wesley, and Mason, Elwood W.: Roentgenological Group Examinations for Pulmonary Tuberculosis, Am. Rev. Tuberc. **37**: 174 (Feb.) 1938. Bloch, Robert G.; Tucker, William B., and Bryant, J. Edmond: Roentgenologic Group Examinations for Pulmonary Tuberculosis in Negroes in Chicago: Preliminary Report, J. A. M. A. **115**: 1866 (Nov. 30) 1940.
5. Potter, H. E.; Douglas, B. H., and Birkelo, C. C.: Miniature X-Ray Chest Film, Radiology **34**: 283 (March) 1940. Bridge, Ezra: Fluoroscopic Roentgenography, Am. Rev. Tuberc. **42**: 155 (Aug.) 1940. Tice, Frederick: The Miniature X-Ray Film in the "Total Survey," J. A. M. A. **115**: 1254 (Oct. 12) 1940. Douglas, Bruce H.; Birkelo, C. C.; Harmon, G. E., and Vaughan, Henry F.: Use of Miniature X-Ray Films in Tuberculosis Case Finding, Am. J. Pub. Health **30**: 1427 (Dec.) 1940.

Current Comment

IMPAIRED JUDGMENT FROM SULFANILAMIDE

Many therapeutically effective drugs influence the physiologic mechanisms, psychomotor reactions or judgment of persons who take them. When given to patients at rest in bed such drugs have been established as beneficial to the patient and of course harmless to other persons. Under some circumstances, however, drugs may have effects potentially dangerous to both patient and community. Not long ago a locomotive engineer who was taking sulfanilamide for an infection of the bladder was involved in an accident in which considerable property damage was done and a number of people were injured. He described the event as follows:

> Approaching the station where the accident occurred, a feeling of lassitude seems to have crept over me unawares and to the extent that I do not have much recollection of what went on for the last two or three miles. I was sitting on my seat, looking out and feeling that I was on the alert. . . . Actually I was not on the job with all my faculties. I passed landmarks customarily used to locate position without seeing them, even to the station board; and it was only when the hazard became imminent that I was aroused out of it and became efficient.

Already physicians have ruled that airplane pilots must not fly until four days have elapsed after they have received any of the sulfonamide group. Patients engaged in mechanical work of any kind should not take sulfanilamide except when relieved from their responsibilities. Physicians thus have a definite obligation when prescribing sulfanilamide. Patients should be cautioned preferably to stay at home and at rest while taking the drug and not to drive an automobile, make any important decision or sign any papers while the drug is being administered. Such recommendations seem especially advisable in view of the insidiously developing reactions of sulfanilamide when compared with such drugs as the bromides and the barbiturates.

U. S. GOVERNMENT VS. AMERICAN MEDICAL ASSOCIATION ET AL.

In this issue of THE JOURNAL appears the final instalment of the proceedings of the trial of the U. S. Government versus the American Medical Association and other defendants. In this instalment are included the final arguments presented to the jury by attorneys Lewin and Kelleher representing the government and William E. Leahy representing the American Medical Association. A careful reading of these arguments will provide a general résumé of the evidence as presented by each side and the interpretations placed on the evidence by the attorneys who spoke. As was published previously, the jury brought in a verdict which found the American Medical Association and the District of Columbia Medical Society guilty but all of the individual defendants not guilty. On May 2 attorneys for the American Medical Association and the other defendants appeared before the court and offered three motions which asked that the verdict of guilty be set aside and a judgment entered in favor of the two corporate defendants, another motion that there be an arrest of judgment, and a third motion that there be granted a new trial. At that time the court offered opportunity to attorneys for the defense and for the government to present additional briefs in support of this motion and opposed thereto on May 10, after which date the court would take the matter under advisement. At this time the court has not yet rendered a decision. No doubt the Board of Trustees and the House of Delegates of the Association at the session to be held in Cleveland, June 2 to 6, will give this matter further consideration as to the procedure to be followed in the future in the conduct of this case.

HEREDITARY TUBERCULOUS DIATHESIS

The establishment of six inbred strains of rabbits with different hereditary resistance to tuberculosis is reported by Lurie[1] of the Henry Phipps Institute, Philadelphia. Two of these families are hereditarily hypersusceptible to tuberculosis, one is hereditarily immune and three are of intermediate susceptibility. The fundamental difference between these family groups is in the degree to which the infection is limited to the port of entry. In tuberculosis naturally acquired by respiratory contagion the most resistant family confines the disease to the lungs, with little or no dissemination to other parts of the body. In the two hypersusceptible families there is a rapid spread by lymph and blood stream. When members of the resistant family are injected intracutaneously with killed tubercle bacilli there is a rapid development of tuberculin sensitivity, with prompt appearance of high titer specific agglutinins. On control vaccination the hypersusceptible family groups develop little or no allergic sensitivity, with almost no formation of specific agglutinins. If these two contrasting groups are afterward injected intracutaneously with living virulent tubercle bacilli, the resistant family develops local lesions which rapidly heal. They quickly develop a local tissue immunity, the local mononuclear cells acquiring the capacity of inhibiting the growth of ingested tubercle bacilli. In the hypersusceptible groups the local lesions show almost no tendency to heal, and the local macrophages do not develop intracellular bacteriostatic properties. The ingested tubercle bacilli multiply rapidly in the cytoplasm of these hypersusceptible cells. An intermediate degree of local macrophagic immunity is shown by families of intermediate resistance. Breeding experiments between resistance and susceptible family groups are now in progress.

1. Lurie, M. B.: Science **92**: 457 (Nov. 15) 1940.

MIXTURES CONTAINING ACETANILID

Three articles on health hazards in acetanilid-containing nostrums and mixtures appeared in the September, October and November issues of the *Journal of the American Dental Association*. The author, Dr. Paul J. Hanzlik, professor of pharmacology at Stanford University School of Medicine, points out how frequently the medical profession and the public may come in contact with acetanilid mixtures. Often the name under which the product is marketed is so misleading that a true concept of the ingredients must be gained from other information. The pharmaceutic industry "boasts" of disposing of "tons" of acetanilid in the United States. Hence it is not surprising that the problem of chronic and acute intoxication should arise. Hanzlik's three papers delve into the problem of chronic intoxication, discuss chronic effects, which include such symptoms as anorexia, impaired nutrition, loss of body weight, anemia, diminished resistance to intercurrent infections, lassitude, dizziness, headaches and apathy; review the question of cyanosis and hemoglobin changes as sulfhemoglobinemia; pass on to an evaluation of addiction and abstinence symptoms and a comparison of the acute fatal and tolerated doses of acetanilid in animals and man, and end with a discussion of the nature of acetanilid analgesia and the analgesia and symptomatic relief by rational procedures other than the use of analgesic drugs. THE JOURNAL has repeatedly carried reports by the Council on Pharmacy and Chemistry and the Bureau of Investigation of the American Medical Association on the possible injurious effects of certain preparations containing acetanilid or other coal tar derivatives proposed for similar pharmacologic effects. The reports by Hanzlik offer an up to date and complete review on the dangers of acetanilid when subjected to promiscuous use.

MEDICAL PREPAREDNESS

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medical preparedness, and such other information and announcements as will be useful to the medical profession.

ARMY RESERVE OFFICERS ORDERED TO ACTIVE DUTY

FIRST CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty by the Commanding General, First Corps Area, which comprises the states of Maine, Vermont, New Hampshire, Rhode Island, Massachusetts and Connecticut:

CARY, Francis F., 1st Lieut., Springfield, Mass., Camp Edwards, Mass.
DENHOFF, Eric, 1st Lieut., Taunton, Mass., Fort Devens, Mass.
HADFIELD, Jonathan P., Major, Fall River, Mass., Fort H. G. Wright, N. Y.
LEVIN, Robert M., 1st Lieut., Hartford, Conn., Camp Edwards, Mass.
MULAIRE, Victor J., 1st Lieut., Hooksett, N. H., Camp Langdon, N. H.
NICHOLS, Arthur A., 1st Lieut., Newtonville, Mass., Camp Edwards, Mass.
PERKINS, George E., Lieut.-Col., Boston, Providence, R. I.
POLLOCK, Henry M., Jr., 1st Lieut., West Medford, Mass., Fort Devens, Mass.
WALKER, Robert, 1st Lieut., Cornwall, Conn., Fort Adams, R. I.

SECOND CORPS AREA

The following additional medical reserve corps officers have been ordered to active duty by the Commanding General, Second Corps Area, which comprises the states of New York, New Jersey and Delaware:

BAXT, Sydney J., 1st Lieut., Brooklyn, Headquarters 2d Military Area, New York.
BEACH, Philip A., 1st Lieut., New York, Camp Livingston, La.
BEIN, Morris, 1st Lieut., Brooklyn, Headquarters 2d Military Area, New York.
BELGOROD, Samuel H., 1st Lieut., New York, Camp Livingston, La.
BENENSON, William, 1st Lieut., Flushing, L. I., N. Y., Fort Benning, Ga.
BENSON, Murray, 1st Lieut., New York, Camp Lee, Va.
BOCKAR, Arnold, 1st Lieut., Warwick, N. Y., Headquarters 2d Military Area, N. Y.
BRESCIA, James J., 1st Lieut., Montgomery, N. Y., Headquarters 2d Military Area, New York.
BROWN, Robert E., Captain, Mount Vernon, N. Y., Camp Livingston, La.
CAGAN, Aaron, 1st Lieut., Brooklyn, Fort Benning, Ga.
CANAAN, Robert, 1st Lieut., Forest Hills, N. Y., Carlisle Barracks, Pa.
CAVUOTI, Michael A., 1st Lieut., Greenvale, L. I., N. Y., Camp Lee, Va.
CHARTERS, Raphael R., 1st Lieut., Brooklyn, New York Port of Embarkment (Army Base), Brooklyn.
CHIRICO, Dominic F., 1st Lieut., Brooklyn, Fort Dix, N. J.
COCKERILL, Thomas J., 1st Lieut., New York, New York Port of Embarkment (Army Base), Brooklyn.
COLEMAN, Robert R., 1st Lieut., Queens Village, N. Y., Alabama Institute of Aeronautics, Tuscaloosa, Ala.
COSGROVE, Joseph V., 1st Lieut., New York, Carlisle Barracks, Pa.
DENEFF, Carl, 1st Lieut., Brooklyn, Fort Jackson, S. C.
DIAMOND, Joseph L., Captain, New York, Camp Stewart, Ga.
FARBER, Harry, 1st Lieut., Brooklyn, Fort Jackson, S. C.
FINE, Sydney G., 1st Lieut., Trenton, N. J., Camp Livingston, La.
FRANCO, Biagio, 1st Lieut., New York, Fort Bragg, N. C.
GIARDINA, Anthony L., Captain, Brooklyn, Fort Niagara, N. Y.
GLASS, Burt A., 1st Lieut., New York, Camp Blanding, Fla.
GLUCK, Roland, 1st Lieut., Brooklyn, Fort Totten, N. Y.
GRANGER, James R., 1st Lieut., New York, Headquarters 2d Military Area, New York.
GRAY, Philip, 1st Lieut., Brooklyn, Camp Lee, Va.
GREENBERG, Avrom M., 1st Lieut., Whitesville, N. Y., Camp Lee, Va.
GREENBERG, Samuel I., 1st Lieut., Brooklyn, Camp Croft, S. C.
HABER, Mordecai, 1st Lieut., New York, Fort Bragg, N. C.
HAIGHT, Julius R., 1st Lieut., Wingdale, N. Y., Fort Jackson, S. C.
HEAD, Arthur E., 1st Lieut., Gouverneur, N. Y., Fort DuPont, Del.
HOCH, Samuel, 1st Lieut., Lynbrook, L. I., N. Y., Camp Lee, Va.
HOROWITZ, Albert W., 1st Lieut., Brooklyn, Camp Lee, Va.
ISRAEL, Murray, 1st Lieut., Williston Park N. Y., Carlisle Barracks, Pa
JASPIN, George, 1st Lieut., Rockville Center, N. Y., Fort DuPont, Del.
KABACK, Harry, 1st Lieut., New York, Camp Lee, Va.
KATZ, Sidney, 1st Lieut., New York, Fort Bragg, N. C.
KAUFMAN, Samuel S., 1st Lieut., New York, Carlisle Barracks, Pa.
KAUNITZ, Paul E., 1st Lieut., Brooklyn, Carlisle Barracks, Pa.
KELLY, William M., 1st Lieut., White Plains, N. Y., New York Port of Embarkment (Army Base), Brooklyn.
KIDDER, James H., 1st Lieut., Fort Dix, N. J., Carlisle Barracks, Pa.
LANDMANN, Heinz R., 1st Lieut., New York, Fort Benning, Ga.
LEADLEY, Jerome H., 1st Lieut., Rochester, N. Y., Fort Slocum, N. Y.
LEDERMAN, Solomon J., 1st Lieut., New York, Carlstrom Field, Fla.
LEE, Arthur B., 1st Lieut., Brooklyn, Fort Bragg, N. C.
LEVINE, Abraham I., 1st Lieut., Brooklyn, Graham Aviation Company, Americus, Ga.
LEVINE, Morris J., 1st Lieut., Atlantic City, N. J., Camp Claiborne, La.
LEVINSON, Leonard J., 1st Lieut., Brooklyn, Fort DuPont, Del.
LOCASCIO, John, 1st Lieut., New York, Camp Lee, Va.
LONG, Hugh K., 1st Lieut., New York, Carlisle Barracks, Pa.
LYNCH, Vincent A., 1st Lieut., Rosedale, L. I., N. Y., Fort Bragg, N. C.
MACCA, Joseph A., 1st Lieut., Forest Hills, N. Y., Camp Blanding, Fla.
MALACH, Robert R., 1st Lieut., New York, Camp Forrest, Tenn.
MARAY, Hugh Z., 1st Lieut., New York, Carlisle Barracks, Pa.
MARGOLIN, Samuel, 1st Lieut., New York, Fort Bragg, N. C.
MAZZA, Peter A., 1st Lieut., Mount Vernon, N. Y., Carlisle Barracks, Pa.
McCOWN, Ira A., 1st Lieut., New York, Camp Livingston, La.
McLAUGHLIN, Thomas F., 1st Lieut., Metuchen, N. J., Fort Jackson, S. C.
MECKLIN, Bennie, 1st Lieut., Depauville, N. Y., Fort Slocum, N. Y.
MERCURI, Pasquale A., 1st Lieut., New York, Camp Livingston, La.
MERRICK, Theodore P., 1st Lieut., New York, Fort Moultrie, S. C.
MERRILL, Frederick H., 1st Lieut., New York, Fort Niagara, N. Y.
MESSINA, Joseph C., 1st Lieut., Brooklyn, Carlisle Barracks, Pa.
MORIARTA, Webster M., Captain, Saratoga Springs, N. Y., Fort Slocum, N. Y.
MYERSON, Alfred I., 1st Lieut., Brooklyn, Camp Livingston, La.
NEWMAN, Herbert F., 1st Lieut., Brooklyn, Fort Lee, Va.
NOBILETTI, Frank, 1st Lieut., Kew Gardens, L. I., N. Y., Camp Livingston, La.
PHEASANT, Homer C., 1st Lieut., New York, Fort Monmouth, N. J.
PICOLLO, Anthony R., 1st Lieut., Union City, N. J., Camp Claiborne, La.
PISANI, Bernard J., 1st Lieut., New York, Fort Totten, N. Y.
POMPER, Irving, 1st Lieut., New York, Fort Jackson, S. C.
POZNER, Harry B., 1st Lieut., New York, Fort Bragg, N. C.
PRUSSIN, George, 1st Lieut., Brooklyn, Fort McClellan, Ala.
REINSTEIN, Herman, 1st Lieut., Brooklyn, Carlisle Barracks, Pa.
RIFORGIATO, Frank T., 1st Lieut, Buffalo, Fort Niagara, N. Y.
RIVKIN, Raymond, 1st Lieut., Jamaica, L. I., N. Y., Camp Lee, Va.
ROCHE, John R., 1st Lieut., Brooklyn, Fort Benning, Ga.
ROSENTHAL, Quintin, 1st Lieut.,New York, Fort Monmouth, N. J.
ROSSANO, Thomas A., 1st Lieut., New York, Fort Benning, Ga.
RUDIN, Louis N., 1st Lieut., Welfare Island, N. Y., Fort DuPont, Del.
SAYET, Maxwell Martin, 1st Lieut., New York, Camp Blanding, Fla.
SCHLEIFER, Morris, 1st Lieut., Brooklyn, Fort Bragg, N. C.
SERGIS, Mooshy, 1st Lieut., New York, Fort Bragg, N. C.
SHAFER, Donald M., 1st Lieut., New York, Fort Totten, N. Y.
SILVERSTEIN, Louis M., 1st Lieut., Brooklyn, Camp Claiborne, La.
SINGER, Joseph I., 1st Lieut., Brooklyn, New York Port of Embarkment (Army Base), Brooklyn.
SPITZER, Joseph M., 1st Lieut., Forest Hills, L. I., N. Y., Carlisle Barracks, Pa.
STAFF, Henry, Captain, New York, Camp Claiborne, La.
TEITEL, Louis, 1st Lieut., New York, Camp Lee, Va.
THOMAS, Lowell I., 1st Lieut., Long Island City, N. Y., Camp Blanding, Fla.
THORNE, George D., 1st Lieut., New York, Headquarters 2d Military Area, New York.
TURNER, Isidore, 1st Lieut., South Fallsburg, N. Y., Headquarters 2d Military Area, New York.
VOGEL, Benjamin F., 1st Lieut., New York, Camp Livingston, La.
WEISER, Edward H., 1st Lieut., Brooklyn, Camp Forrest, Tenn.
ZUCKERBERG, Irving, 1st Lieut., Bayonne, N. J., Camp Shelby, Miss.

CORRECTION

Captain Graubard.—In the list of reserve officers ordered to active duty under the Second Corps Area in THE JOURNAL, April 12, page 1649, David J. Graubard was listed as a first lieutenant when he should have been listed as a captain.

SEVENTH CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty by the Commanding General, Seventh Corps Area, which comprises the states of North Dakota, South Dakota, Minnesota, Nebraska, Iowa, Kansas, Missouri, Arkansas and Wyoming:

ALDERSON, Clair Milton, 1st Lieut., Dodge City, Kan., 53d Evacuation Hospital, Camp San Luis Obispo, Calif.
AUCHARD, Virgil Marion, Major, Lawrence, Kan., 85th Field Artillery, Camp Roberts, Calif.
BOSSINGHAM, Earl Nathaniel, Captain, Clarinda, Iowa, 153d Station Hospital, San Francisco.
BUSHNELL, John William, Captain, Elk Point, S. D., Corps Area Service Command Induction Station, Fort Crook, Neb.
CLARK, Bernard Stearns, 1st Lieut., Spearfish, S. D., Anti-Aircraft Artillery Regiment, Camp Haan, Riverside, Calif.
COLE, Ward Martin, 1st Lieut., Wellington, Kan., Anti-Aircraft Artillery Regiment, Camp Haan, Riverside, Calif.
COPE, Josef Shelton, Captain, Lexington, Mo., Corps Area Service Command Induction Station, Fort Leavenworth, Kan.
DECICCO, Ralph, Captain, Des Moines, Iowa, 40th Field Artillery, Camp Roberts, Calif.
DODDS, George Alfred, 1st Lieut., Valley City, N. D., 19th Coast Artillery, Fort Rosecrans, Calif.
EDERER, John Joseph, 1st Lieut., Mahnomen, Minn., 9th Army Corps Troops, Fort Lewis, Wash.
GAMET, Elmo Eugene, 1st Lieut., Lamoni, Iowa, 9th Army Corps Troops, Fort Lewis, Wash.
GILMAN, Lloyd Clayton, 1st Lieut., Atwater, Minn., 3d Army Corps Troops, Fort Ord, Calif.
HARTMANN, Clarence Melchior, 1st Lieut., Fairfax, Minn., 3d Army Corps Troops, Fort Ord, Calif.
HATHAWAY, Stillman John, Captain, Proctor, Minn., 9th Army Corps Troops, Fort Lewis, Wash.
JUMP, Walter Clinton, Captain, Kasson, Minn., 3d Army Corps Troops, Fort Ord, Calif.
KUNCL, Joseph, Captain, Alliance, Neb., 47th Engineers Regiment, General Staff, Fort Ord Calif.
LEEHEY, Paul Joseph, 1st Lieut., Independence, Iowa, 47th Engineer Regiment, General Staff, Fort Ord, Calif.
McCRAY, Raymond Vaughn, 1st Lieut., Malvern, Ark., Engineer Replacement Center Infirmary, Fort Leonard Wood, Mo.
MOEN, Stanley Tamolyn, Captain, Hartley, Iowa, 53d Evacuation Hospital, Camp San Luis Obispo, Calif.
MORIARTY, John Francis, 1st Lieut., Rock Rapids, Iowa, Corps Area Service Command Station Hospital, Fort Leonard Wood, Mo.
MURPHY, Arlo Lewis, 1st Lieut., Fredericksburg, Iowa, Corps Area Service Command Induction Station, Jefferson Barracks, Mo.
MYER, Kermit Whitney, 1st Lieut., Sheldon, Iowa, Engineer Replacement Center Infirmary, Fort Leonard Wood, Mo.
NIELSON, Arthur Lawrence, 1st Lieut., Harlan, Iowa, 85th Field Artillery, Camp Roberts, Calif.
O'BRIEN, Louis Timothy, 1st Lieut., Wahpeton, N. D., 30th Field Artillery, Camp Roberts, Calif.
OLSON, Grant Edmund, 1st Lieut., West Concord, Minn., 30th Field Artillery, Camp Roberts, Calif.
OSTEN, Burdette Hubert, 1st Lieut., Northwood, Iowa, Corps Area Service Command Reception Center, Fort Snelling, Minn.
PALMER, Harry Allen, 1st Lieut., Blackduck, Minn., Corps Area Service Command Reception Center, Fort Snelling, Minn.
PALMERTON, Ernest Sterling, 1st Lieut., Albert Lea, Minn., 85th Field Artillery, Camp Roberts, Calif.
PLATZ, John Herschel, Captain, Carrollton, Mo., 155th Station Hospital, Camp Roberts, Calif.
POWER, Allyn Richard, 1st Lieut., Hot Springs, Ark., Corps Area Service Command Station Surgeon's Office, Fort Riley, Kan.
ROLIG, David Howard, 1st Lieut., Howard Lake, Minn., Corps Area Service Command Reception Center, Jefferson Barracks, Mo.
ROSENBAUM, Harry David, Captain, University City, Mo., Corps Area Service Command Induction Station, Fort Leavenworth, Kan.
ROSENBERG, David Sam, 1st Lieut., Franklin, Neb., 56th Coast Artillery, Harbor Defenses, San Francisco.
SCHAEFERLE, Lawrence George, 1st Lieut., Garwin, Iowa, Engineer Replacement Center Infirmary, Fort Leonard Wood, Mo.
SCHNEIDER, Albert Leo, Captain, Brady, Neb., Corps Area Service Command Induction Station, Fort Snelling, Minn.
SHARRAR, Lynn E., 1st Lieut., Lincoln, Neb., Anti-Aircraft Artillery Regiment, Camp Haan, Riverside, Calif.
SHEPPARD, Julius Kelly, 1st Lieut., El Dorado, Ark., 35th Division, Camp J. T. Robinson, Ark.
SIMONS, Leander Theodore, Captain, St. Paul, Corps Area Service Command Station Hospital, Fort Leonard Wood, Mo.
SMITH, Lloyd Arthur, 1st Lieut., Balaton, Minn., 40th Field Artillery, Camp Roberts, Calif.
STARR, Charles Mike, 1st Lieut., Larned, Kan., 40th Field Artillery, Camp Roberts, Calif.
STAUCH, Martin Oscar, Major, Whiting, Iowa, 19th Coast Artillery, Fort Rosecrans, Calif.
STERLING, Allen Fred, 1st Lieut., Norway, Iowa, eye, ear, nose and throat specialist Corps Area Service Command Induction Station, Jefferson Barracks, Mo.
WADD, Clifford Theodore, 1st Lieut., Janesville, Minn., 166th Station Hospital, Harbor Defenses, San Diego, Calif.
WEPPRICH, Michael Schall, 1st Lieut., Union, Mo., 6th Coast Artillery, Harbor Defenses, San Francisco.
WHITNEY, Richard Aurie, 1st Lieut., Cambridge, Minn., 30th Field Artillery, Camp Roberts, Calif.

NINTH CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty by the Commanding General, Ninth Corps Area, which comprises the states of Washington, Montana, Oregon, Nevada, Utah, California and Idaho:

BERGSTROM, Brigham J., 1st Lieut., San Francisco, 1st Medical Regiment, Fort Ord, Calif.
BERNSTEIN, Abraham, Major, San Francisco, Fort Winfield Scott, Calif.
BERNSTEIN, Maxwell R., 1st Lieut., Pittsburg, Calif., 3d Army Corps, Presidio of Monterey, Calif.
BLAND, Leland J., 1st Lieut., Tacoma, Wash., Northwest Air District, Fort George Wright, Wash.
BUEHLER, George S., 1st Lieut., Whittier, Calif., 7th Division, Fort Ord, Calif.
CHALIAN, Alexander R., 1st Lieut., Oakland, Calif., 1st Medical Regiment, Fort Ord, Calif.
CHERNOW, Marvin L., 1st Lieut., Chico, Calif., 7th Division, Fort Ord, Calif.
COCKS, Charles E., Captain, Oakland, Calif., Camp Roberts, Calif.
COLLINS, James W., 1st Lieut., Modesto, Calif., 7th Division, Fort Ord, Calif.
CORP, Keith W., 1st Lieut., Salinas, Calif., Corps Area Service Command, Fort Ord, Calif.
COUNTER, Henry M., 1st Lieut., Buena Park, Calif., Camp Roberts, Calif.
DAVIS, Barnard, Captain, San Francisco, Fort Winfield Scott, Calif.
DODD, Abby M., Captain, Los Angeles, 155th Station Hospital, Camp Roberts, Calif.
DOLEZAL, Joseph B., 1st Lieut., Battle Mountain, Nev., Station Hospital, Fort Lewis, Wash.
EGAN, Albert R., 1st Lieut., San Diego, Calif., 9th Army Corps, Fort Lewis, Wash.
FALK, Sidney M., 1st Lieut., Fresno, Calif., Corps Area Service Command, 1962, Fort Ord, Calif.
FOLEY, William J., 1st Lieut., Larkspur, Calif., 41st Division, Camp Murray, Wash.
HAYDEN, Wilber C., 1st Lieut., Tulelake, Calif., 41st Division, Camp Murray, Wash.
HENRICHSEN, Arthur L., 1st Lieut., Van Nuys, Calif., Camp Haan, Riverside, Calif.
HERZOG, George K., Jr., 1st Lieut., San Francisco, Corps Area Service Command, Fort Ord, Calif.
HILTY, Henry L., 1st Lieut., Los Angeles, 9th Army Corps, Fort Lewis, Wash.
HIRSHBERG, Howard A., 1st Lieut., Los Angeles, Camp Roberts, Calif.
JACOBS, Joseph J., 1st Lieut., San Francisco, Fort Winfield Scott, Calif.
JAMENTZ, Albert H., Captain, Pasadena, Calif., Corps Area Service Command, 1962, Fort Ord, Calif.
JOHNSON, Arthur F., 1st Lieut., Seattle, Station Hospital, Fort Lewis, Wash.
JOHNSON, Vernal H., 1st Lieut., Ogden, Utah, 9th Army Corps, Fort Lewis, Wash.
KENNEDY, William J., 1st Lieut., Oakland, Calif., 7th Division, Fort Ord, Calif.
KUYKENDALL, John, 1st Lieut., Eugene, Ore., 203d General Hospital, Fort Lewis, Wash.
KYLE, Charles L., Captain, Spokane, Wash., Camp Murray, Wash.
LEVY, Sanford E., 1st Lieut., San Francisco, Station Hospital, Fort Lewis, Wash.
MOURER, Lyle A., 1st Lieut., Los Angeles, 1st Medical Regiment, Fort Ord, Calif.
NELSON, Hiram M., 1st Lieut., Barstow, Calif., 9th Army Corps, Fort Lewis, Wash.
NORBERG, Raymond W., Captain, Kingsburg, Calif., 9th Army Corps, Fort Lewis, Wash.
NORTON, John A., 1st Lieut., Santa Maria, Calif., 3d Army Corps, Presidio of Monterey, Calif.
PIERCE, Wallace H., 1st Lieut., Cottonwood, Ida., 9th Army Corps, Fort Lewis, Wash.
RADEMACHER, Clyde J., 1st Lieut., Bend, Ore., 9th Army Corps, Fort Lewis, Wash.
RAFFERTY, Frank W., Captain, Astoria, Ore., Camp Murray, Wash.
ROBINSON, Frank H., Captain, Chula Vista, Calif., Camp Murray, Wash.
ROE, Harold E., Captain, Berkeley, Calif., Surgeon's Office, Headquarters 9th Corps Area.
ROSENBLOOM, David, 1st Lieut., Los Angeles, Fort Rosecrans, Calif.
ROSENGREEN, George E., 1st Lieut., Ogden, Utah, Station Hospital, Fort Lewis, Wash.
ROSSER, Bernard H., 1st Lieut., Los Angeles, Corps Area Service Command, 1962, Fort Ord, Calif.
SEARING, Donald H., Captain, Monmouth, Ore., 41st Division, Camp Murray, Wash.
SICHERMAN, Karl L., Captain, Hollywood, Calif., 41st Division, Camp Murray, Wash.

SMITH, Leo D., Captain, Stockton, Calif., 1st Medical Regiment, Fort Ord, Calif.
STILLMAN, Freeman L., 1st Lieut., Ventura, Calif., 166th Station Hospital, Fort Rosecrans, Calif.
STOLFA, Laddie L., 1st Lieut., Los Angeles, Camp Roberts, Nacimiento, Calif.
SUDDUTH, Leland F., 1st Lieut., Los Angeles, 3d Army Corps, Presidio of Monterey, Calif.
THALE, Harold B., 1st Lieut., Los Angeles, 9th Army Corps, Fort Lewis, Wash.
WYBORNEY, Eugene H., 1st Lieut., Arlington, Calif., Camp Roberts, Nacimiento, Calif.

ORDERED TO FOREIGN DUTY

ARNOLD, George K., Captain, from Fort Crockett, Texas, to the Philippine Department, sailing from Charleston, June 23.
BAERS, Harry, 1st Lieut., Headquarters Hawaiian Department, Fort Shafter, Honolulu, Hawaii.
BERTRAM, Harold F., 1st Lieut., M. R. C., from Fort Sam Houston, Texas, to the Philippine Department, sailing from San Francisco, April 21.
BIVINS, Thomas E., 1st Lieut., from Fort Ord, Calif., to the Panama Canal Department, sailing from San Francisco, April 12.
BLOUNT, Robert E., Captain, from Philippine Department to Lovell General Hospital, Fort Devens, Mass.
BRANNAN, Max, 1st Lieut., from Orlando, Fla., to the Panama Canal Department, sailing from Charleston, April 12.
BRENNER, Frank Tallmadge, Jr., Captain, Quincy, Ill., Henry Barracks, Cayey, Puerto Rico.
BUCKHOLD, Wilbert W., 1st Lieut., M. R. C., from Fort Knox, Ky., to the Philippine Department, sailing from San Francisco, April 21.
BURGE, Julius C., Jr., 1st Lieut., M. R. C., from Camp Forrest, Tenn., to the Philippine Department, sailing from San Francisco, June 2.
CHASEN, William H., 1st Lieut., from Boston to the Hawaiian Department, sailing from New York, June 7.
COMSTOCK, Jack A., 1st Lieut., M. R. C., from Denver, to the Philippine Department, sailing from San Francisco, April 21.
CONE, Frank, 1st Lieut., M. R. C., from Fort Brown, Texas, to the Philippine Department, sailing from San Francisco, April 21.
DAILEY, Jeremiah Aloysius, Captain, Cranston, R. I., 11th Medical Regiment, Schofield Barracks, Honolulu, Hawaii.
DAVIS, John K., Captain, M. C., from Panama Canal Department to the Surgeon General's Office, Washington, D. C.
D'ALFONSO, Anthony Daniel, 1st Lieut., Philadelphia, Dispensary, Hickam Field, Hawaii.
DIESSNER, Warren H., Captain, prior orders amended, to Panama Canal, Balboa Heights, C. Z.
FRAWLEY, John T., 1st Lieut., M. R. C., prior orders amended: to Panama Canal Department, sailing from Charleston, S. C., June 14.
GILES, Robert W., 1st Lieut., prior orders amended, to Hawaiian Department, sailing from New York, April 1.
GOAD, Lloyd H., 1st Lieut., M. R. C., from El Paso, Texas, to the Philippine Department, sailing from San Francisco, April 21.
GOOD, Wealty William, 1st Lieut., Ottawa, Kan., 11th Medical Regiment, Schofield Barracks, Honolulu, Hawaii.
GOULD, Lloyd E., Captain, from Panama Canal Department to Fitzsimons General Hospital, Denver.
HARRIS, Frank H., 1st Lieut., M. R. C., prior orders amended; sail from New York, April 8, for Hawaiian Department.
HEINBACH, Wilfred F., Jr., 1st Lieut., from Indiantown Gap, Pa., to the Philippine Department, sailing from San Francisco, April 21.
HERMES, Richard L., 1st Lieut., M. R. C., prior orders amended: to Air Corps, Puerto Rico.
HEWLETT, Thomas H., 1st Lieut., M. R. C., from Fort Knox, Ky., to the Philippine Department, sailing from San Francisco, April 21.
JOHNSON, George E., Major, M. R. C., from Camp Hulen, Texas, to the Philippine Department, sailing from San Francisco, April 21.
KATZ, Charles J., 1st Lieut., M. R. C., from Fort Bliss, Texas, to the Philippine Department, sailing from San Francisco, April 21.
KAUFFMAN, Nelson Niessen, 1st Lieut., Indianapolis, Headquarters, Philippine Department, Fort Santiago, Manila, Philippine Islands.
MARSICO, John, 1st Lieut., from Fort Knox, Ky., to the Philippine Department, sailing from New York, April 8.
KERR, Charles R., Major, M. R. C., from Fort Sam Houston, Texas, to the Philippine Department, sailing from San Francisco, April 21.
KESCHNER, Harold W., 1st Lieut., M. R. C., from Fort George G. Meade, Md., to the Philippine Department, sailing from San Francisco, April 21.
KYSOR, Benjamin B., Jr., 1st Lieut., M. R. C., from El Paso to the Philippine Department, sailing from San Francisco, April 21.
McKEE, Robert Doreck, 1st Lieut., Houston, Texas, Schofield Barracks, Honolulu, Hawaii.
MELINDER, Roy J., 1st Lieut., M. R. C., from Camp Barkeley, Texas, to the Philippine Department, sailing from San Francisco, April 21.
MICKEL, Arthur A., 1st Lieut., from Fort Ord, Calif., to the Philippine Department, sailing from San Francisco, April 26.
MILLER, Edward Simpson, 1st Lieut., M. R. C., from Camp Livingston, La., to the Philippine Department, sailing from San Francisco, June 2.
MORRISON, Marcus E., 1st Lieut., M. R. C., from Fort Hayes, Ohio, to the Hawaiian Department, sailing from San Francisco, May 17.
NASH, Louis R., 1st Lieut., M. R. C., from Fort Snelling, Minn., to the Philippine Department, sailing from San Francisco, April 21.
PAWOL, Sylvester E., 1st Lieut., from Camp Bowie, Texas, to the Panama Canal Department, sailing from Charleston, S. C., April 12.
PHARR, Percy P., 1st Lieut., from Fort Knox, Ky., to the Panama Canal Department, sailing from New York, April 10.
PLESSINGER, Virgil A., 1st Lieut., from Washington, D. C., to the Hawaiian Department, sailing from New York, June 21.
PORTER, Robert F., 1st Lieut., from Fort Knox, Ky., to the Panama Canal Department, sailing from New York, April 10.
ROBINSON, Donald W., 1st Lieut., M. R. C., from Denver to the Philippine Department, sailing from San Francisco, April 21.
RUBIN, Myron Michael, 1st Lieut., Brooklyn, 11th Medical Regiment, Schofield Barracks, Honolulu, Hawaii.
SABIN, Howard Q., 1st Lieut., M. R. C., from Fort Hancock, N. J., to the Philippine Department, sailing April 21.
SCHNELLER, Oscar, Captain, from Lakeland, Fla., to Panama Canal Department, sailing from Charleston, S. C., May 3.
SCHULTZ, Frank B., Captain, M. R. C., from Fort George G. Meade, Md., to the Hawaiian Department, sailing from San Francisco, June 2.
SHAW, Vaughan A., 1st Lieut., from Camp Blanding, Fla., to the Philippine Department, sailing from San Francisco, April 21.
SMITH, Donald H., 1st Lieut., M. R. C., from Fort Bliss, Texas, to the Philippine Department, sailing from San Francisco, April 21.
STINSON, Charles L., 1st Lieut., M. R. C., from Puerto Rican Department to Port of Embarkation, Brooklyn.
SWANSON, Wendell F., Captain, from Fort Knox, Ky., to the Philippine Department, sailing from Charleston, S. C., June 21.
TEMPLE, Francis E., 1st Lieut., M. R. C., from Fort Adams, R. I., to the Puerto Rican Department, sailing May 8.
TOUSIGNANT, Albert N., Captain, M. R. C., from Fort Bliss, Texas, to the Philippine Department, sailing from San Francisco, April 21.
TREMAINE, Jay E., 1st Lieut., M. R. C., from El Paso to the Philippine Department, sailing from San Francisco, April 21.
VAN WAGONER, Frank H., Captain, from the Hawaiian Department to the Office of the Surgeon General, Washington, D. C.
WALLACE, John K., II, 1st Lieut., from Camp Claiborne, La., to the Philippine Department, sailing from San Francisco, April 21.
WEINSTEIN, Alfred A., Captain, M. R. C., prior orders amended, to the Philippine Department, sailing from San Francisco, June 2.
WHITELEY, Robert K., 1st Lieut., M. R. C., from Fort Sheridan, Ill., to the Philippine Department, sailing April 21.
WILSON, Charles H., Major, from Camp Blanding, Fla., to the Philippine Department, sailing from San Francisco, April 21.
WILSON, William E., 1st Lieut., M. R. C., from Camp Joseph T. Robinson, Ark., to the Philippine Department, sailing from San Francisco, April 21.
ZALIN, Jacob, 1st Lieut., M. R. C., from Fort Jackson, S. C., to the Philippine Department, sailing from San Francisco, June 2.

NAVAL RESERVE OFFICERS ON ACTIVE DUTY

The following medical officers of the U. S. Naval Reserve have reported for active duty since April 24, 1941:

AGREST, Francis A., Lieut. (j. g.), M. C.-V. (G.), Brooklyn, Fleet Marine Force, Quantico, Va.
AUSTER, Lionel S., New York, Lieut. Comdr., M. C.-V. (S.), Naval Hospital, Brooklyn.
BENSON, Martin H., Lieut., M. C.-V. (S.), Lubbock, Texas, Marine Recruiting Station, Dallas, Texas.
BOLTON, Robert M., Lieut. Comdr., M. C.-V. (S.), Washington, D. C., Naval Dispensary, Navy Department, Washington, D. C.
BUTLER, George L., Lieut. (j. g.), M. C.-V. (S.),Beaumont, Texas, Naval Air Station, Corpus Christi, Texas.
CAREY, John E., Lieut. (j. g.), M. C.-V. (G.), Buffalo, Naval Training Station, Newport, R. I.
CORBOY, Philip M. J., Lieut., M. C.-V. (S.), Valparaiso, Ind., Naval Hospital, Great Lakes, Ill.
DENMAN, Byford H., Lieut., M. C.-V. (S.), Houston, Texas, Merchant Marine Reserve Unit, Port Arthur, Texas.
DOBBS, Lee F., Jr., Huntington, W. Va., Lieut. (j. g.), M. C.-V. (G.), Naval Air Station, Pensacola, Fla.
EBELING, Walter W., Mount Vernon, Wash., Lieut., M. C.-V. (S.), Naval Hospital, Puget Sound, Wash.
ENKELIS, Jacob J., Portland, Ore., Lieut. Comdr., M. C.-V. (S.), Navy Recruiting Station, Portland, Ore.
EWING, John P., Lieut., M. C.-V. (S.), Los Angeles, Naval Dispensary, Long Beach, Calif.
FARNSWORTH, Dana L., Lieut., M. C.-V. (S.), Williamstown, Mass., Naval Hospital, Philadelphia.
FORBES, Wilfred W., Brookline, Mass., Lieut. (j. g.), M. C.-V. (G.), Naval Hospital, Newport, R. I.
GARDNER, Julius Stanley, Lakewood, Ohio, Lieut. Comdr., M. C.-V. (S.), Naval Hospital, Great Lake, Ill.
GLENN, Wadley R., Atlanta, Ga., Lieut., M.C.-V. (S.), Naval Reserve Air Base, Atlanta, Ga.
GOODLOE, Noble M., Lieut. (j. g.), M. C.-V. (S.), Houston, Texas, Naval Air Station, Corpus Christi, Texas.
GOODMAN, Moses, Brooklyn, Lieut. Comdr., M. C.-V. (S.), Naval Reserve Air Base, Brooklyn.
GROHOWSKI, Alphonsus L., Lieut. (j. g.), M. C.-V. (G.), Sugar Notch, Pa., Fleet Marine Force, Quantico, Va.

GUERNSEY, Paul F., Los Angeles, Lieut. Comdr., M. C.-V. (S.), Naval Hospital, San Diego, Calif.
HARRIS, Joseph H., Medical Lake, Wash., Lieut. (j. g.), M. C.-V. (G.), Fleet Marine Force, Quantico, Va.
HARRIS, Maxwell J., Carthage, Mo., Lieut. (j. g.), M. C.-V. (S.), Naval Training Station, Great Lakes, Ill.
HAYES, John J., Fort Wayne, Ind., Lieut., M. C.-V. (S.), Norfolk Naval Hospital, Portsmouth, Va.
HAZZARD, Charles T., New York, Lieut., M. C.-V. (S.), Naval Hospital, Brooklyn.
HELMKAMP, George F., Lieut., M. C.-V. (G.), Los Angeles, Naval Dispensary, Long Beach, Calif.
HENDERSON, Jesse L., Lieut. Comdr., M. C.-V. (S.), Pasadena, Calif., Naval Hospital, Great Lakes, Ill.
HIGGINS, Clinton K., St. Louis, Lieut. Comdr., M. C.-V. (S.), Naval Hospital, Great Lakes, Ill.
JAMES, Audra D., Des Moines, Iowa, Lieut. Comdr., M. C.-V. (S.), Naval Hospital, Great Lakes, Ill.
JARVIS, James A., Kansas City, Mo., Lieut., M. C.-V. (S.), Marine Recruiting Station, Kansas City, Mo.
KAPLAN, Harry E., Los Angeles, Lieut. Comdr., M. C.-V. (S.), Naval Dispensary, Long Beach, Calif.
KEENAN, Peter J., Lieut. (j. g.), M. C.-V. (S.), San Francisco, Naval Hospital, Mare Island, Calif.
KLEIN, Elmer, Lieut. Comdr., M. C.-V. (S.), Washington, D. C., Naval Dispensary, Navy Department, Washington, D. C.
McCARTHY, Horace F., Lawrence, Mass., Lieut. (j. g.), M. C.-V. (S.), Navy Yard, Portsmouth, N. H.
McCREARY, Pegram L., Lieut., M. C.-V. (S.), Lake Charles, La., Naval Air Station, Corpus Christi, Texas.
MacDONALD, Donald H., Boston, Lieut., M. C.-V. (S.), Naval Hospital, Newport, R. I.
MARTIN, John P., Lieut. (j. g.), M. C.-V. (G.), Camden, Del., Naval Hospital, Philadelphia.
MAZET, Robert, Jr., Washington, D. C., Lieut., M. C.-V. (S.), Marine Recruiting Station, St. Louis.
MERRILL, Whitman, Washington, D. C., Lieut., M. C.-V. (S.), Naval Hospital, Pensacola, Fla.
MOSS, Leland C., Lieut. Comdr., M. C.-V. (S.), Washington, D. C., Naval Dispensary, Navy Department, Washington, D. C.
MUNDELL, Benjamin J., Lieut. (j. g.), M. C.-V. (S.), Washington, D. C., Naval Dispensary, Navy Department, Washington, D. C.
OLSEN, Richard E., Pontiac, Mich., Lieut. (j. g.), M. C.-V. (S.), Naval Hospital, Great Lakes, Ill.
POMEROY, Rex K., Port Washington, Wis., Lieut., M. C.-V. (S.), Naval Training Station, Great Lakes, Ill.
POWERS, William L., Lieut. (j. g.), M. C.-V. (S.), Wichita Falls, Texas, Naval Air Station, Corpus Christi, Texas.
REYNOLDS, Chester L., Rochester, N. Y., Lieut. (j. g.), M. C.-V. (S.), Naval Hospital, Parris Island, S. C.
RYAN, Clark D., Los Angeles, Lieut. Comdr., M. C.-V. (S.), Naval Hospital, San Diego, Calif.
SCARCELLO, Nicholas S., Worcester, Mass., Lieut., M. C.-V. (S.), Naval Hospital, Chelsea, Mass.
STEWART, Franz H. von S., Lieut. (j. g.), M. C.-V. (S.), Miami, Fla., Naval Air Station, Miami, Fla.
WEBER, Walter M., Lieut. (j. g.), M. C.-V. (S.), San Francisco, Navy Yard, Mare Island, Calif.
WERDEN, Delbert H., Lieut., M. C.-V. (S.), San Diego, Calif., Naval Hospital, San Diego, Calif.
YAVORSKY, William D., Lieut. (j. g.), M. C.-V. (G.), Cedar Rapids, Iowa, Marine Recruiting Station, Des Moines, Iowa.
YOUNG, John C., Asheville, N. C., Lieut. Comdr., M. C.-V. (S.), Naval Hospital, Parris Island, S. C.

NATIONAL NUTRITION CONFERENCE FOR DEFENSE

Five hundred persons interested in nutrition have been invited by Federal Security Administrator Paul V. McNutt to attend a National Nutrition Conference for Defense called by the President to be held at the Hotel Mayflower, Washington, D. C., May 26-28. The purpose of the conference is to assist in the formulation of a national nutrition policy and in the organization of a program of action. General sessions will be held each morning, and section meetings in the afternoons and evenings. Among speakers who are expected to address the conference are Vice President Henry A. Wallace, Secretary of Agriculture Claude R. Wickard, Assistant Secretary of State Adolf A. Berle Jr., Surgeon General Thomas Parran of the U. S. Public Health Service and Mr. McNutt.

EXAMINATIONS FOR APPOINTMENTS IN MEDICAL CORPS OF NAVY

The next examination for appointments as assistant surgeon, U. S. Navy (lieutenant [junior grade], Medical Corps, U. S. Navy) will be held at all major Medical Department activities on August 11 to 15 inclusive. Applications for this examination must be in the Bureau of Medicine and Surgery not later than July 15.

Applicants for appointment as assistant surgeon must be citizens of the United States, more than 21 but less than 32 years of age at the time of acceptance of appointment, and graduates of a class A medical school who have completed at least one year of intern training in a hospital accredited for intern training by the Council on Medical Education and Hospitals of the American Medical Association.

A circular of information listing physical and other requirements for appointment, subjects in which applicants are examined, application forms and other data pertaining to salary, allowances and so on may be obtained from the Bureau of Medicine and Surgery, Navy Department, Washington, D. C., on request.

An examination for appointment as acting assistant surgeon for intern training in naval hospitals accredited for intern training by the Council on Medical Education and Hospitals will be held at all major Medical Department activities on June 23 to 26 inclusive. Students in class A medical schools who will complete their medical education this year are eligible to apply for these appointments.

Students in class A medical schools who will have completed their third year of medical education this year are eligible to take this examination and, if successful, will receive their appointments on or about July 1, 1942, after they have completed their medical education.

Applicants for appointment as acting assistant surgeon for intern training must be citizens of the United States, more than 21 but less than 32 years of age at the time of acceptance of appointment. Acting assistant surgeons are appointed for a period of eighteen months. After the appointee has served as an intern in a naval hospital for twelve months he is eligible for and may take the examination for appointment as assistant surgeon, U. S. Navy.

A circular of information listing physical and other requirements for appointment as acting assistant surgeon, subjects in which applicants are examined, application forms and so on may be obtained from the Bureau of Medicine and Surgery, Navy Department, Washington, D. C., on request.

Assistant surgeons and acting assistant surgeons for intern training are appointed in the rank of lieutenant (junior grade), Medical Corps, U. S. Navy. The pay and allowances for an officer of this rank total $2,699 a year if he has no dependents and $3,158 a year if he is married or has dependents.

GUARDING THE SUPPLY OF HELIUM

The U. S. government's helium plant in Texas is the world's sole producer of helium. About 15 per cent of the output of the plant is sold for medical, scientific and commercial use, the other 85 per cent of the output being supplied directly to the government. At the current rate of production this plant will produce by the end of the fiscal year about 14,000,000 cubic feet of helium. The plant has produced more than 110,000,000 cubic feet of helium since it began operations about twelve years ago. There are proposals now in Congress to increase both the well and the plant capacity. Measures are being taken to insure that no interruption in operation shall occur. Dr. R. R. Sayers, director of the Bureau of Mines, reported to the Secretary of the Interior that steel guard towers are being constructed at strategic points. A tower is being erected also in the gas field from which a general view of the government's helium properties can be obtained.

REGULAR MEETING AT NAVAL SCHOOL

At the regular monthly meeting of the medical officers of the navy in the District of Columbia at the Navy Medical School, April 7, Dr. Henry L. Bockus, Philadelphia, spoke on "Liver Function Tests in the Diagnosis and Management of Jaundice."

ORGANIZATION SECTION

AMERICAN MEDICAL ASSOCIATION ON TRIAL

THE TRIAL OF THE CASE OF THE UNITED STATES OF AMERICA

VS.

THE AMERICAN MEDICAL ASSOCIATION, A CORPORATION, THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA, A CORPORATION, THE HARRIS COUNTY MEDICAL SOCIETY, AN ASSOCIATION, THE WASHINGTON ACADEMY OF SURGERY, AN ASSOCIATION, ARTHUR CARLISLE CHRISTIE, COURSEN BAXTER CONKLIN, JAMES BAYARD GREGG CUSTIS, WILLIAM DICK CUTTER, MORRIS FISHBEIN, THOMAS ALLEN GROOVER (DECEASED), ROBERT ARTHUR HOOE, ROSCO GENUNG LELAND, THOMAS ERNEST MATTINGLY, LEON ALPHONSE MARTEL, FRANCIS XAVIER MCGOVERN, THOMAS EDWIN NEILL, EDWARD HIRAM REEDE, WILLIAM MERCER SPRIGG, WILLIAM JOSEPH STANTON, JOHN OGLE WARFIELD JR., OLIN WEST, PRENTISS WILLSON, WILLIAM CREIGHTON WOODWARD, WALLACE MASON YATER, JOSEPH ROGERS YOUNG.

(Continued from page 2200)

APRIL 2—MORNING

OPENING ARGUMENT TO THE JURY ON BEHALF OF THE UNITED STATES

MR. JOHN H. LEWIN

Mr. Lewin:—May it please the Court, and ladies and gentlemen of the jury: The time has now come when you must listen to what is known as the summing up of the evidence from counsel on both sides of the case, and after a long two months trial I don't know how to be more helpful to you at the start than to state what I believe is the issue, the narrow issue of fact which you are called on to decide; and I conceive that issue to be: Did the defendants, the two corporations and the eighteen individuals, plan together or plan to take action together to restrain and hinder the activities of this cooperative medical group association by:

1. Enforcing rules and regulations designed to prevent doctors, including members of the defendant societies from joining Group Health, or from consulting with Group Health, or having anything to do with it, and

2. By inducing the private independent hospitals, otherwise independent institutions, to join with them in preventing Group Health Association from having a chance even to get courtesy staff privileges at those independent hospitals.

Now, I think I can further emphasize that narrow issue of fact, as to which there can be only one answer beyond a reasonable doubt, by stating what issues are not before the jury. Group Health Association is not on trial, and whatever faults it may have had, of its own making or by reason of the restraints imposed on it, are not to be criticized here or questioned. This is not a private suit between Group Health Association, on the one hand, and these doctors on the other; and the comparative merits of the two, and their two methods of distributing medical service, are not in issue. This is a case between the United States of America on the one hand and the defendants on the other, brought not because of an offense against Group Health but because of an offense against the Federal law: The Federal law that prescribes the conduct that anybody must live up to, high or low, who engages in a controversy with his competitors. Ladies and gentlemen of the jury, this is not a case—whatever insinuations may be made to the contrary—against all doctors, or against the medical profession as a whole. The Grand Jury, after deliberation, indicted these doctors, not all doctors, and two corporations whose members happen to be doctors, and these individuals who happen to be doctors, not because they were doctors but because it is charged that they entered into specific conduct and took specific action. This is not a case to vindicate or sponsor any particular form of medical care or the distribution of medical care. It is simply to vindicate the natural law that any citizen has, unhampered by boycotts and oppression, to find that form of distribution of medical care that suits him. And you need not, I say, assume the responsibility which the Government has not assumed, to attempt to determine the merits or the demerits of any particular form of medical care. The issue here is that whatever that form, the people who adopted it were entitled to pursue it without boycotts and restraint against it.

And this is not a case to force anybody to like Group Health Association. All of us, including the doctors, have a perfect right to like or dislike it, as they please; and the only point is that their animosity, and their dislike, must not be carried to the extent where they put into operation something which restrains the normal right of people and organizations which they dislike. And, so they may disapprove, so anybody may disapprove Group Health Association, provided that disapproval does not bring into effect a rule which forbids, or which requires a course of conduct which oppresses the persons disapproved. And so, I return again to the narrow issue, with these false issues brushed aside: Did the defendants do more than disapprove Group Health Association? Did they attempt a plan to obstruct its successful operation, by preventing doctors, including their own eight hundred thirty doctors, from having anything to do with Group Health Association, whether they wanted to or not; and by inducing these private hospitals, who otherwise would have made up their minds independently, perhaps with advice, but who would have taken independent action, with that plan to induce these hospitals, not to exercise their own, independent judgment; not to require adherence to reasonable regulations, but the behest of the defendants imposed on them; and I submit, ladies and gentlemen, in all fairness, that that issue of fact can be answered in only one way, and that is in the affirmative. And why do I say that? I say that because the evidence in this case answers that question over and over again, and it is the best evidence that could be produced, unimpeached and unimpeachable evidence; documentary evidence, contemporaneously written with the happening of the event, as a record of it; evidence contained in minutes and records proceeding from the mouths of the defendants themselves, written and recorded when their conduct was not drawn in question in any regard, and not qualified here in any substantial degree because you, I am sure, will remember defense witness after defense witness took that stand and simply reaffirmed the Government's evidence by saying that the document was written, and it meant what it said.

Now, let us come to Group Health Association for a moment. What was it? It was a nonprofit, mutually beneficial, cooperative, launched by its well meaning, altruistic sponsors, with no profit or gain to themselves, to do two reasonable things: to give their members medical care at less cost by the advantages of group practice, as to which there certainly could be no objection, and the chance to budget their family expenses for medical care by small prepayments of dues, so they could spread that cost over a period of time and over a group of people; and if those things aren't unreasonable, how could they be unreasonable in combination? And that is what it was, and it was nothing more than a plan to do that sort of thing throughout most of '37, and throughout '38, down to the very fall, it was simply trying to get started. It had no organization, no personnel, no activities. There could be no question of the quality of its medical care, because it was giving none,

no medical care; and yet during that time this boycott was conceived and plotted against it, plotted against it because of those two ideals it had—the group practice idea and the prepayment budget idea.

Now, it needed a chance to get in the hospitals. It had no right to demand of any hospital that it be taken in, and this case is not to force the demand of any person to insist that the hospital take them in: rather it is to vindicate the free independence of a hospital to make that decision for itself, on the advice, if you please, of its medical staff, but advice that should be confined to the medical standpoint of the applicant.

What was the hospital situation? There were twelve private hospitals, and only twelve, Group Health could turn to. It wanted a chance to state its case and negotiate with these hospitals freely and independently, and get the hospitals' own determination, but the medical staffs—the attending or regular staffs of those hospitals—were almost entirely composed of members of the defendant's society, so you start with that measure of control. They sought application to the courtesy staffs and it is true that a great many of the courtesy staffs were members of the District Medical Society, but up to that time ten of them had no rule that in order to become a member of the courtesy staff you must be a member of the District Medical Society, and the A. M. A. You will see later how that rule came about, and the purposes for which it was adopted, but ten of them had no such rule. Casualty had a rule that you must be qualified for membership in the District Medical Society, and Emergency, the only one that had the rule prior to this conspiracy, had not enforced it; and you will see it took steps to enforce it strictly against Group Health Association. You will see later how, through the activities of the A. M. A., acting through the defendant Cutter, and the activities of the defendant Warfield and his committee, operating under authority from the District Medical Society, all of those hospitals during this conspiracy, and for the purpose of preventing Group Health doctors—not simply Selders, but any of them—from getting into the hospitals, adopted that rule which was known as the Mundt Resolution, that their courtesy staffs must be confined to members of the District Medical Society, and I will discuss that later.

Now, what was the machinery that the defendants had at hand? Well, they had this resolution; they had this part of their constitution:

"Members shall not accept appointment to, or otherwise continue to serve upon medical staffs of any hospital which is not approved by the Society."

Now, what did that mean? It meant that if they denied approval to any hospital, for any capricious reason they pleased, stated or unstated, disclosed or undisclosed, not one of its eight hundred thirty doctors could have anything to do with that hospital. It gave them a power, for any reason they pleased, practically to unstaff and ruin any hospital they chose. This is not fanciful, because you will see in the evidence it is not theoretical, but it was resorted to.

And then they had another way. Section 5, amended March 3, 1937. Before that time it applied to private organizations. Now, they made it apply to Group Health.

"No member of the Society shall engage in any professional capacity with any organization, group, or individual, by whatever name called or however organized, engaged in the practice of medicine within the District of Columbia or within ten miles thereof, which has not been approved by the Society."

There again. Withdraw or withhold approval for any reason they pleased, stated or unstated, disclosed or undisclosed: and, presto, eight hundred thirty must quit. Is that boycott? And they left that approval, not simply to the District Medical Society, but to its executive committee so that the executive committee had the power, by simply putting the finger on any one it chose to withdraw this entire group of professional men from having anything whatsoever to do with it. And on June 1, 1937 Group Health Association had no activities, and no medical personnel, but one medical director. A prominent member of the executive committee of the defendant corporation suggested the use of that machinery. He said they had two weapons at hand, and I am quoting.

"One, forbid consultation, and
"Two, withhold approval of any hospital that would take any cases or assist the movement in any way."

Weapons: Does that sound like affirmative opposition being planned as early as June 1, 1937? And he repeats it more strongly to the executive committee on June 21. He says there are two ways. Two ways of doing what? Of persuading that Group Health is a bad idea? Two ways of combating, combating Group Health Association:

"One, discipline our own members who undertook to participate, and
"Two, the possibility of doing something to recalcitrant hospitals through pressure of their staffs."

Does this throw any light on that narrow issue? "On their staffs." "Through pressure on their staffs." And how was this done? You will remember the witness Macatee. This is one of the little bits of significant evidence. He did not deny making those suggestions. Here is what he said, and I quote:

"The record would have to be clarified by my conviction that so far as the Medical Society itself could proceed in this or any similar circumstances it would have to be limited by its own constitution and by-laws, and what it could do under the constitution and by-laws in disciplining its members if they should become involved adversely with any provisions of the constitution and by-laws, and that so far as hospitals were concerned, we should only exert an influence through our own members so far as that might go."

His own members. His own members dominating the staffs of the hospitals; and doesn't that qualification leave those two suggestions exactly where we found them in the first instance, with the minutes, unchallenged, through June and July, showing particular interest on the part of a number of the defendants as to how Group Health would get hospital privileges?

Hooe pointedly asks Brown—he was the medical director of Group Health—if Group Health could function with hospitals and hospitalization left out.

Bennett pointed out that some hospitals require courtesy staffs to be A. M. A. members and suggested that Brown's cooperation with the Medical Society would be important, and he suggested that these facts be brought to the attention of the rest of the board.

Willson and McGovern discussed the same subject July 29. On July 12, the first day action was taken on this approved list, after its adoption, which omitted G. H. A., and that approved list was amended so that there would be no doubt that it didn't carry approval of G. H. A., because one of the categories approved were doctors connected with the Government, and the argument might have been made that Group Health, under their contention, Group Health doctors were connected with the Government—they changed it so there could be no doubt that Group Health would be left off. At that very meeting action was taken for the first time under this machinery of section 5, amended in March, with a committee headed by McGovern, and with Hooe, reported to the executive committee, and this report is adopted by this committee, given to the executive committee, and the executive committee tables it for further consideration, and you will see it received it. This language appears:

"The doctors of Group Health Association"—I am quoting now—"will probably surely fail to be put on the courtesy list of the hospitals for one reason or another without the fact of his connection with the cooperative being even mentioned. In fact, any combative method would necessarily have to be camouflaged to the nth degree."

Ladies and gentlemen, will you bear that in mind when you hear these far fetched excuses for the rejection of all the Group Health doctors, some of which there isn't any question as to their qualifications, and when you hear these excuses bear in mind the suggestion of the committee, "Hold for further consideration," and that they

"could easily fail to be put on the courtesy list of the hospitals for one reason or another without the fact of his connection with a cooperative even being mentioned. In fact, any combative methods would necessarily have to be camouflaged to the nth degree."

And on July 26 when the committee met with representatives of Group Health their spokesman points out again their so-called principles of ethics, intending people to believe that they were principles of morals but really principles of economic conduct gotten up to condemn a competitive system of distributing medical care; gotten up by that branch of the A. M. A., which is nothing but a business protective association. And he points out those economic rules and, significantly, calls their attention to the fact that they would make them unethical, and that the same would hold true—and I quote:

"As regards the necessary contacts in the local hospitals, for your hospitalization would have to be cared for,"

and they then tried to persuade Group Health not to go on.

And then on July 29 this approved list, this white list, omitting G. H. A.—the first one ever issued—is issued by the Society and with it go two letters of the defendant Conklin, and it is authorized to go not only to their own members but to these independent hospitals as a suggestion as to what they

must do, and one of the letters says, calls attention to "organization or organizations interested in gaining medical personnel." Macatee, on that stand, corroborated these facts, which is all too apparent, that that organization was Group Health Association, interested in gaining medical personnel; and here was a word to the wise, that they must not get personnel and not have a chance even to deal with the local private hospitals on a fair, man-to-man, honorable basis.

And there is evidence that the hospitals took it to heart. In August the president of Sibley Memorial Hospital replies to this letter, acknowledging its receipt, that is of the white list, and says:

"Its provisions will be carried out by this institution."

Now, what was the A. M. A., the parent body, doing all this time? Just as soon as they heard of it, they condemned it as unethical; they used this horrible word which a normal man might suppose was a charge of immorality. As their past president defined it, the conduct of a gentleman, observing the golden rule, the Ten Commandments. Certainly there was nothing like that involved here, and they sent posthaste from Chicago to Washington their three big men, their full salaried men, their doctor general manager West, their Dr. Cutter, and their doctor lawyer. What to do? Simply to get information? The resolution under which they came showed they were to advise the District Medical Society, and the evidence shows that they did so. And then the Trustees of the American Medical Association, alarmed by this competition, instructs the defendants Fishbein and West, their doctor journalist and doctor general manager, to bring the situation to the attention of the entire medical profession, and an article is to be written, to be published in THE JOURNAL and distributed among their one hundred and ten thousand doctors.

That article was more than informative. It was a dynamic thing. It was intended to carry, and it did carry, a message to shape their conduct. I quote from it. And it was being prepared all through the summer of 1937:

"As the members of the salaried staff of the Association are likely to be looked on by the profession generally in the community as on the outer verge of ethical practice, if not altogether beyond the pale, it is not clear how they are to obtain qualified consultants or procure hospital service for their patients.

"In any event, medical service under the Association would be likely to be handicapped by difficulty likely to be experienced in obtaining the best consultant service and hospital accommodations. Physicians who sell their services to an organization like Group Health Association for resale to patients are likely to lose professional status."

Not only were those suggestions expressed perfectly clear, but the implications were clear too and they were:

1. Regard G. H. A. as unethical and hope people will believe that is a dirty charge of immorality; that it is conduct unbecoming a gentleman, in violation of the Ten Commandments and golden rule; but really the economic object of these people, unchallenged by free thought and free action.

2. Put its doctors beyond the pale. Qualified and unqualified, men like Scandiffio and Hurlbut and Lee, and all the others as to whom there is no question concerning their abilities.

3. Refuse to deal or consult with them, and refuse to let them treat their Group Health patients in hospitals.

Those are the implications and the authors so intended them. They sent it not only here to Washington but to Maryland and Virginia for action by those societies, and the letter accompanying urges them to take an active part in the contest, and it refers to the article as "useful in any cooperative work you may undertake"; nor was the purpose of those suggestions lost on the District Medical Society, or its members. On September 27 a resolution was offered that the District Medical Society be admonished to read the entire article for their information and guidance. Nor were these implications lost on the parties they were intended to impress. On October 6 a resolution was adopted by the executive committee reciting that the District Medical Society is in full accord with the contents of said reports, both as to the established facts set forth therein—and they were very few—as you will remember, the author said: "and the implications drawn therefrom"; and then resolved that the Society

"cause a copy of said report to be sent to each of its members as an indication of its future policies with respect to combating the activities of said Group Health Association."

And that resolution was offered by one of the persons named defendant, seconded by Dr. McGovern, and adopted by the full Society. And that the implications that I have suggested were then intended is shown by the fact that the author of that resolution, when he stated that the implications were clear, pointed to those very excerpts from that article which I have read this morning. Now, the white list had gone out in July, and its purpose and its intent and effect perfectly clear, but so exercised were the defendants they wanted assurances doubly sure, so in the fall of 1937 the defendants were afraid that its meaning might not be sufficiently clear to the hospitals, or that the hospitals might disregard it, and the defendant Hooe suggests on Oct. 11, 1937, that a letter be sent to the directors of each of these hospitals warning them—get that word "warning" them—I quote:

"that if they failed to cooperate in every way they might not be on the approved list."

And at that meeting of the executive committee, a letter, prepared by the defendant Sprigg, was recommended to go to each of the hospitals, and it recited the provision of the constitution that I have read to you: that no member could have anything to do with a hospital not approved, and no member could have anything to do with any organization practicing medicine not approved by them, reciting both those sections; and then it called on those hospitals for cooperation.

The evidence is perfectly clear that that suggested letter was aimed at Group Health Association. There can be no doubt about it, and now I read this excerpt from the minutes as to the effect that letter was intended to have:

"One member would inquire if it was meant that members of the Society would not be permitted to practice in a hospital that did not subscribe to any approved list; in other words, if they attempt to practice in a hospital not approved by the Society the members of the Society would be duty bound to keep clear of that hospital,"

and the defendant Sprigg, the chairman of the executive committee, the man who had prepared the letter, answered that that interpretation was correct.

It is a threat to unstaff unless "you do what we tell you to do." The high point, I think, in all this plotting, was reached when this defendant then said that the Society requires—and I quote—

"merely that a man to practice in the District of Columbia must be approved by the Society."

What has happened to the law? What has happened to licensure? Because it is clear that they recognize that a man cannot practice his profession if he is barred from consultation if the epithet "unethical" is hurled at him, and if he cannot even get a chance to get in the hospitals on his own merits. No, he cannot practice in the District of Columbia, cut off absolutely from a chance to make a living unless he is approved by this private corporation. Haven't things come to a sorry pass?

He then referred to the doctors on the approved list and said, and I quote:

"This letter doesn't keep those men out of the hospitals."

Those that get on these lists: they can get in the hospitals. All right, don't keep them out. They must contend with all the powers of tyranny, when Scandiffio, Lee and Hurlbut and the rest cannot practice their profession in the District of Columbia.

And then on November 6 a committee of the District of Columbia goes out to Chicago and gets further aid and comfort. When they get there it is Dr. McGovern and Dr. Hooe telling West and Woodward what they came for, and they quote the very resolution in pursuance of which they come, the Stanton Resolution, and they recite from that resolution that it is the duty of the American Medical Association—what to do? Argue, persuade, debate? Oh, no. To oppose immediately with all its might—and I tell you they are calling on great might—Group Health Association, and then, quoting again from that resolution:

"It is the opinion of the Medical Society of the District of Columbia that it is the duty of the A. M. A."—

what to do? To gather information? To disseminate it to people who inquire for it?

"—to combat vigorously Group Health Association."

At this meeting West assures them that the Trustees of the A. M. A. have given certain instructions. And what were they? "Instructions to oppose it." He says the A. M. A. has not exhausted all its means and it has no idea of quitting, and I quote again:

"It will continue fighting it every way we can."

It was not necessary for the defendants to go to Chicago and have this talk, because the A. M. A., as it boasted itself, had already been in this plan of oppression even before the

District Medical Society got very active, because West wrote to Poling on December 4:

"The A. M. A. has done everything that it could do to oppose the organization and the operation of the Group Health Association in the District of Columbia. The A. M. A. became active in this matter before the Medical Society of the District of Columbia began its efforts in opposition."

And in that letter is given other reasons as to whether this evidence had anything to do with the conduct of gentlemen who observed the golden rule and the Ten Commandments, and it is this:

"That if Group Health is successful." That is what they feared. Not that it will be unsuccessful. "—the private practice of medicine in the city of Washington will be largely destroyed."

And at this same meeting the delegates from Washington bring to the A. M. A.'s attention this hospital situation. They tell them that the executive committee has recommended that a letter be addressed to the medical boards of the various hospitals calling attention to H. O. L. C., and insisting that the hospitals take notice of it and, among other things, calling attention to the fact that physicians employed by such groups are not acceptable to the Medical Society of the District of Columbia; and in reply to Dr. McGovern's question as to whether they might control the hospitals West merely expresses his opinion that there is some doubt about it, and he is recorded as saying, "It is reasonable that they should do it."

Now, I ask you, ladies and gentlemen, if those statements of the defendant West which I have read, and there are other statements like it in the record, are consistent or compatible with his testimony on the stand that all he in the American Medical Association was interested in doing was simply acting as a collector of facts which they would disseminate to interested people. If that is all they were doing, don't you agree that he used very strange language indeed?

The defendant Willson, you will remember, testified that he never cared for section 5. He objected to sending the Sprigg letter. Now, what were his objections? His testimony tells you, and I quote:

"My own personal feeling was that this method of approach to the hospitals in connection with G. H. A. was inexpedient and calculated to engender friction rather than any real assistance in the problem."

He didn't like the letter because he didn't think it would work, because of the method. He preferred another, which you will see, and another member said he thought this letter would cause a lot of uncomplimentary comment against the Medical Society and the profession generally by the lay boards. He felt that this information should be conveyed to them orally when they would have nothing to fight back with. And that is the reason the letter was abandoned for the November 3 resolution of Willson, seconded by Christie, and passed by the Society itself.

And let me go back to that resolution one moment, because do you need anything more?

"WHEREAS, The Medical Society of the District of Columbia has an apparent means of hindering the successful operation of Group Health Association, if it can prevent patients of physicians in its employ being received in the local private hospitals; and

"WHEREAS, The Medical Society of the District of Columbia has no direct control over the policies of such hospitals as determined by their lay boards of directors, except through its control of its own members serving on their medical staffs"—

and believe me that is plenty. You see, the approach is to be made through the medical staffs, because they can turn a doctor down and pretend it is on his qualifications. They can camouflage to the nth degree, without even anybody knowing, perhaps, that he is connected with Group Health. And then he points to this Section 5; and then the resolution adopted by the Society is:

"*Resolved*, That the Hospital Committee be"

—and that is omitted by the defendant Warfield—

"and is hereby directed to give careful study and consideration to all phases of this subject and report back to the Society, at the earliest practicable date, its recommendations as to the best way of bringing this question to the attention of the medical boards and boards of directors of the various local hospitals in such a manner as to insure the maximum amount of practical accomplishment with the minimum amount of friction and conflict."

Why is it referred to the hospital committee? Because the hospital committee is composed of one member from each one of the local hospitals and they can get to the medical boards, and the medical boards can advise the directors. But at this early date, at that very meeting, one of the members of the executive committee reported that every hospital in the city was cooperating with the medical profession against Group Health Association, with one exception. Bear in mind there was no question of qualifications of doctors then. And on November 11, at a meeting attended by one of these defendants from the A. M. A., this hospital committee brings in its report, and its report is innocuous; it is useless, it doesn't reach the problem. His report is Group Health patients should be admitted but they should be treated only by members of the courtesy staffs of the hospitals. Why, of course, no one could ever pretend otherwise, except in an emergency, but the point was that there was no assurance that Group Health doctors would not be on the courtesy staffs, unless something else was done; and Yater, the defendant Yater, pointed that out, and he moved to recommit that as not going far enough because it didn't give assurances that the members of Group Health staff were not on the courtesy staffs, and then and there the president, Neill, reported that there were at least two doctors who were members of the Society, Lee and Scandiffio, on G. H. A.'s staff.

You will remember that just about that time the proceedings got under way for the expulsion of Lee and Scandiffio, but they could get through a rule like the rule of the Mundt Resolution that confined the courtesy staffs to their own members, then all they had to do is see that no Group Health doctors got in their Society, and those in got out; and then they have something; and just at this time you will remember the hospitals want definite instructions as to how to proceed. They know that Lee and Scandiffio are still members of the Society; they have them on the courtesy staffs of some of these hospitals. On November 10 the superintendent of Homeopathic sent, as an expression of its attitude, to the Society, as the attitude of that hospital against Group Health Association, the letter the defendant Custis, their chief of staff, wrote to Penniman on November 9, saying that until approved by the District Medical Society, the Homeopathic Hospital could not enter into any arrangement with it. And the secretary of the Medical Board of Georgetown, on November 18, writes to the Society:

"What is the opinion of the Society concerning the members who are now engaged with Group Health Association as regards to consultations by the hospital staff members, and admissions to the hospital for their patients?"

And the answer is forthcoming on Dec. 1, 1937, when the Warfield committee comes back with a report that does mean something, and it is the rule of the Mundt Resolution, and it says it shall be recommended to the hospitals, and a "word to the wise is sufficient," and that their entire staffs shall be confined to members of the District Medical Society, or the other local societies of the A. M. A.

Now, then, they have something. All they have to do is to see that Lee and Scandiffio get out, and none of the staff get in.

Let us see what the A. M. A.—let's catch up on the A. M. A. Let me show you that from August 1937 to November 1937, while this conspiracy I have described was at its height, the defendant Cutter, the secretary of the Council on Hospitals of the A. M. A., was hard at work on five of the Washington hospitals that had not been inspected for years previously, to make them adopt this same rule of the Mundt Resolution; and he succeeded in every instance, and he did it by courteous phrases in the first instance, because that was all that was necessary. If they didn't come along he could withdraw their registration, their approval for intern training; he could bring down a dire catastrophe on any hospital that resisted. So, in wielding the big stick, all he had to do was speak softly, and he employed a formula that had worked well in other places, and which he boasted had worked well. He wrote:

"What possibility, if any, exists for the observance of this recommendation in the Washington Sanitarium and Hospital?"

They write back:

"Each application for staff appointments calls for the Medical Society to which the applicant belongs. Would this meet the requirement of the resolution?"

They are not in doubt as to whether it is a requirement. And Cutter writes back:

"The intention remains that of hospitals stipulating membership as the basis for the assignment of hospital privileges."

Well, here is one, and he was not invited down here by the Washington Sanitarium to inspect it.

He writes the same formula to Georgetown, and gets back:

"The executive staff ruled at its last meeting that no physician shall be nominated or elected to any staff of the hospital unless he is a member

of his local Medical Society or the A. M. A. Members who are already on the staffs specified by you as not meeting these requirements will be notified to qualify within the year."

Here is another one.

Providence, another hospital, the same formula—and he gets another. You will remember Providence. He says:

"As matters stand now, we believe quite likely that when this statement is submitted to the Council at its regular meeting early in November, internship approval will be withdrawn."

And the Providence superintendent writes back that:

"No words can express my distress at the possibility of losing the A. M. A.'s approbation of our intern training school. Nothing will be omitted either by the staff, the hospital, or the superintendent to prevent what would prove to be a dire catastrophe to Providence Hospital, the loss of its accreditation for intern training."

And then he is told:

"Members of the staffs who do not belong to the Medical Society of the District of Columbia have been contacted, and at the present time, all non-members have submitted their applications for membership, so that now, with those exceptions, all members of our staff are members of the A. M. A. or affiliated with its constituent societies."

The same thing at George Washington Hospital:

"The problem then is reduced to three members of the clinical staff, and I feel that this number will be reduced very shortly."

Now, Columbia Hospital. The same formula. No response. He follows it up. It is not simply a suggestion; he follows it up. Eventually, back on November 5, we have the following:

"As for the demand that 'physicians on the staffs . . . should be limited to members in good standing in their local county medical societies,' it meets with the approval of the Medical Board as regards future appointments. So far as known, all present members of the staff of this hospital, except one, are members of the District Medical Society."

There is no doubt but what that formula and that follow-up was a demand and a requirement and was very effective, whatever anybody may say.

Cutter himself had said—and this is in connection with the use of the formula elsewhere—

"It has not been necessary to take drastic action against any hospitals on the basis of the membership resolution of the House of Delegates since prompt results have usually been obtained by less formidable action on the part of the Council."

Cutter himself had said that the purpose of the Mundt Resolution was—and I quote:

"to smoke out from the staffs of some hospitals certain men who were regarded as objectionable but whom the hospital felt a delicacy in removing."

Cutter himself had said—and I quote him:

"The Council on Medical Education and Hospitals will, without question, adhere to the instructions of the House of Delegates in requiring that hospitals . . . have on the staff only physicians that are members of the County Medical Society."

Cutter himself had said:

"We have used this same method with respect to quite a number of hospitals and the response has, in almost all instances, been completely satisfactory."

You, I am sure, will recall how Dr. Cutter finally admitted on the stand, under cross examination, that after those doctors out in Chicago had been expelled because they had a prepayment clinic, which was objected to on the ground that it was contrary to sound public policy, whatever that may mean—I ask you, who in the world ever entrusted to any private corporation the power to affect public policy without ever bothering to define it or to set up standards to guide anybody in observing it?

You will recall that after that happened he admitted on the stand that he wrote to every one of the private hospitals in Milwaukee in turn, first letters, and then follow-up letters, until those doctors who had been expelled were no longer members of the staffs of any of those hospitals. I asked him:

"*Q.*—And you don't attribute that result in the slightest degree to your efforts?

"*A.*—I do not say that. I think it may have affected it."

He gets this letter in July 1938 from the last hospital that held out, Mount Sinai:

"Drs. A. L. Curtin and H. F. Wolters were removed from the active staff of Mount Sinai Hospital and courtesy privileges were withdrawn from these two men, as well as from Drs. Sullivan, Reuth and Dahlwig, in accord with your letter dated July 14, 1938 and telephone conversation held with you on Friday, July 15, 1938."

And in the light of that evidence of his activities and what he said as to the results he accomplished, can you believe for one moment that Cutter did not intend to hang over the heads of the Washington hospitals a threat of ruination if these hospitals should open their staffs to G. H. A. doctors—unless they subordinated themselves and violated their trust and made themselves the slaves and the followers of the behest of these organizations?

And the Warfield committee which, on Dec. 1, 1937 embarked on the same program of achieving compliance with the Mundt Resolution in the other hospitals in Washington, achieved similar success.

The Hospital Committee went to work, and I will show you its favorable report on the results of its activities; and when the December 1 resolution came to Garfield Hospital the defendant McGovern, secretary of the Medical Staff, responded, and he told the District Medical Society in January 1938 that the "present policy in force at Garfield is in conformity with the provisions of" the December 1 resolution.

By "present policy" he means the present policy, Macatee to the contrary notwithstanding, because the questionnaire for Garfield, with Warfield himself on the staff of that hospital, reported that at that time there were only 75 per cent of the membership of the courtesy staff who were members of the District Medical Society, but that this requirement was exacted of "all recent appointments."

So there is no doubt but what Garfield fell into line because of this resolution.

President Taylor of Sibley Hospital, who had responded favorably to the White List, responded equally favorably to the December 1 resolution. He writes—and I quote:

"There are no changes in the Council's personnel in contemplation at present, but should such contingency arise, you will know that proper regard will be paid to the wishes expressed in the aforementioned resolution."

So that when the Group Health Doctors come up, Sibley is ready for them.

With respect to Children's Hospital, on Dec. 6, 1937, four days after the receipt of the December 1 resolution, it amended its by-laws to require courtesy staff members be members of the District Medical Society.

Emergency Hospital. You remember the testimony, that that was the one that had a rule from April 1936. You will also remember the testimony of Sandidge, and also from Mitchell, that it had not been strictly enforced.

In June 1938, after receipt of the resolution and after these activities of the Hospital Committee it began a policy of strict enforcement, resolving—

"That the Courtesy Committee carefully check the list of doctors who have been given courtesy privileges at Emergency and who are not members of the D. M. S., (or their local medical society in the case of physicians who are nonresidents of the District), and that these members be notified that they must join the Medical Society or the hospital will be obliged to revoke their privileges."

That was after those activities. Although it was not strictly enforced, it was very strictly enforced with regard to Group Health Association.

You remember that Lee, when he joined Group Health Association, tendered his resignation from the District Medical Society. I think that was on October 31. And will you believe it!—he received from Emergency notification that his privileges were withdrawn on the very next day.

Oh, yes; there was strict enough enforcement for the Group Health Association doctors.

THE COURT:—If it is agreeable to you, Mr. Lewin, we will take a short recess.

Mr. Lewin:—Will that be counted against my time?

THE COURT:—I do not think so.

Mr. Lewin:—I am agreeable. I would love to have a recess.

(A brief informal recess was taken, at the conclusion of which the following proceedings took place:)

Mr. Lewin:—When we recessed I was calling the jury's attention to the documentary evidence which shows the success that the Hospital Committee had with respect to the enforcement of the Mundt Resolution, that courtesy staff privileges were to be confined to members of the defendant corporations. I told you about Garfield's response, about Sibley's response, about Children's Hospital's amendment four days after they got the resolution, and Emergency Hospital's response.

On Dec. 21, 1937, on a motion of the same defendant Custis, who had written that letter to Group Health Association that they could have nothing to do with them because they were not approved by the District Medical Society, Homeopathic Hospital for the first time adopted this rule. And I caution

you that the questionnaire makes a mistake as to that and says that the rule started on Jan. 1, 1937, when it clearly means Jan. 1, 1938. It is the usual mistake in the entry of the year, because there was a resolution adopted for the first time in December of 1937, confining their staffs to members of the defendant corporation, pursuant to the behest of the defendant corporation.

So you will see that Cutter's activities accounted for five hospitals, Columbia, George Washington, Providence, Georgetown and Washington Sanitarium. There is documentary evidence as to Emergency, Homeopathic, Sibley and Children's hospitals; and I will show you later the report of Warfield on his check-up, that he had them all except three. He was wrong about it, because he meant Columbia, George Washington, and Sibley; and here they are (indicating). He said he found them all cooperating against Group Health Association. And so they were.

What difference does it make with regard to the qualifications of a Group Health doctor in his application to any of these hospitals? He could have had the qualifications of an Osler, and he would run his head up against this stone wall; he would be denied membership on the hospital staffs, would be denied courtesy privileges at the hospitals regardless of his qualifications.

Does that not make all these insinuations about Dr. Selders' qualifications totally beside the point?

Just as the Society was concerned in the fall of 1937 as to whether the White List had taken effect, just so we find them in the early part of 1938 still demanding that assurance be made doubly sure, because the defendant Yater comes back and says, at the meeting in the early part of February, that Georgetown, among others, has some doubts as to what to do with members of the G. H. A. staff who were formerly members of the District Medical Society; that they were in a dilemma as to how to proceed.

And the defendant Hooe, chairman of the Disciplinary Committee, was quick with his suggestion that a letter be prepared warning them if they did not observe the White List, and he now suggests

"that a committee of the Society should go around among the hospitals and attempt to get them to outline a policy of disapproval of the G. H. A."

And then the defendant Mattingly presents a resolution; and he is the defendant, you will remember, who wrote to the Grand Jury boasting of what he had done, and you remember that he said in that letter—and can you want any more than this on the issue of fact that I have suggested?

"I frankly admit the following acts of professional leadership, successfully accomplished."

Professional leadership?

"I personally raised the question and forced the issue of compelling wavering or undecided hospitals"

Compelling, mind you!

"to deny courtesy privileges to staff members of G. H. A. . . . I successfully used my position as a member of the Medical Council to prevent Dr. Raymond Selders from receiving courtesy privileges at Sibley Hospital."

Not only did he use his influence at Sibley on the Medical Council against one man, but he raised the question and forced the issue—by reasonable persuasion and debate? By "compelling wavering or undecided hospitals to deny courtesy privileges to staff members"—to unqualified men?—"to staff members of G. H. A."

And this was his resolution. This was in February 1938:

"That the proper agency of the Medical Society be instructed to present at our next stated meeting the facts relating to the present status of Group Health physicians at the various Washington Hospitals preliminary to appropriate disciplinary action, in event any hospital has ignored the Medical Society's wishes in the premises."

Preliminary to appropriate disciplinary action against these independent hospitals, if they had ignored the wishes of the defendant.

And that resolution is not to be lightly brushed aside as some man's blundering overstatement. Oh, no. It is taken seriously by the Executive Committee and is referred to what committee? The Hospital Committee—the same committee headed by the defendant Warfield and a member of which was on the staff of each one of the hospitals. A questionnaire was sent out by Warfield to every member of that committee to report, and those questionnaires are in evidence.

They start off with a question about Group Health Association, and they ask, "What is the policy of the hospital? Is it favorable to the policy of the District of Columbia Medical Society?"

And every one of them replied in the affirmative.

The whole questionnaire was addressed to the Group Health Association problem; and when those hospitals were reporting as in favor of the policy of the District Medical Society they were in favor of the policy that I have described to you, ladies and gentlemen.

Only two of them reported on those questionnaires that there were members of Group Health Association on the Hospital Staff at that time. Sibley Hospital reported that Dr. Scandiffio was then on the Courtesy Staff, and you will see from Warfield's report, in a moment, how that institution had assured the chairman of the Hospital Committee of the District Medical Society that steps would be taken to deny that doctor his privileges.

The Homeopathic Hospital questionnaire was made out by the Hospital Committee representative, Dr. Birdsall, and signed by the Superintendent of that hospital, reporting that Lee and Scandiffio had privileges. They were under the misapprehension that Lee was still a member of Group Health Association, but he had resigned under circumstances that you will remember. This questionnaire was signed by the superintendent and reported that—

"future action regarding them awaits the action taken by D. C. Medical Society."

And then—I quote:

"The hospital wants to cooperate with D. C. Medical Society. Would like advice about course to pursue regarding applications from patients holding Group Health Association. Also regarding consultations in such cases."

And so, on March 28, 1938 the Hospital Committee of the defendant Society, through the defendant Warfield, was enabled triumphantly to report complete success:

"that at this time, the majority of local private hospitals contain in their by-laws a provision that a physician in order to practice in the hospital must be a member or qualified for membership in his or her local medical society. All of the local private hospitals are cooperating fully with the Medical Society in respect to Group Health Association, Inc. At the present time only one of the local hospitals has on its staff list the name of a physician connected with Group Health Association, Inc."

He must have been referring to Sibley, or it might have been Homeopathic Hospital. The tabulation that was offered in evidence showed Sibley having Dr. Scandiffio there.

"This hospital does not revise its staff list annually, as do the other hospitals, but it has assured the chairman of the Hospital Committee that steps have been taken to deny this physician hospital privileges."

Ladies and gentlemen of the jury, this (indicating) was shown you before, and I am not going to burden you with it again, but it is a photostatic copy of the report from which I have just read and it recites these resolutions that I recited to you this morning, beginning with the November 3 resolution which started the action with the hospitals, and the resolution that Mattingly had offered, referring to appropriate disciplinary proceedings against any hospital which should ignore their wishes; and when it was written, you remember that in the second paragraph we find this:

"In an effort to hinder the operation of Group Health Association, Inc., in the local private hospitals the Medical Society adopted a resolution."

That is stricken, and in the handwriting of Warfield—this was offered against Warfield alone—appear, instead of "hinder the operations of Group Health Association," which were the words of the resolution, the following sanctimonious words:

"To maintain the high standards of practice."

When it comes to the first paragraph on the second page he strikes out these words:

"preliminary and appropriate disciplinary action in event any hospital had ignored the Medical Society's wishes."

Those sanctimonious changes from what he really meant were made in the Executive Committee when he made his report, because the minutes of the Executive Committee show that this resolution was adopted "with slight changes which pertain to paragraph 2 and paragraph 3." And here they are (indicating).

It was adopted by the Executive Committee on March 28 and was reported to the Society on April 6, and it was adopted by formal vote of the Society on April 6, when a representative of the A. M. A., one of the defendants, was present when the action was taken.

In the light of that evidence, unimpeached and unimpeachable, proceeding from the mouths of the defendants themselves, and written down to be preserved contemporaneously and currently with the event, could there be any reasonable doubt on the narrow issue that here was a plan to take concerted action to hinder the successful operation of Group Health Association—I use their own words—"by preventing patients of physicians in its employ being received in the local private hospitals"?

Just for a moment or two I would like to turn to the evidence that corroborates everything that I have said, proceeding from the hospitals themselves. Bear in mind, ladies and gentlemen, the hospitals are not defendants in this case. They were in a hot spot. Whatever their independent wishes may have been, they certainly were unavailing, in the face of this kind of pressure backed up by real power.

When we turn to the hospital records themselves what do we find? Was Dr. Selders kicked out of the hospital because of his qualifications? I wish I had time to recite to you what the record shows as to his qualifications.

He had five degrees from higher institutions of learning. I would like to refresh your recollection as to his practice for seven long years in Houston as a surgeon; as to his postgraduate work in the postgraduate school of the University of Pennsylvania; the receipt of his Master's degree in Surgery; as to his splendid record at the Worcester City Hospital—Mr. Castle's gossipy letter, based upon hearsay on hearsay, to the contrary notwithstanding; as to the fine things that were said about him, including that which was said about him by the secretary of the Harris County Society, in the same letter that said they were going to bring disciplinary proceedings against him; as to his fine qualifications as a general surgeon, as Dr. Brown reported to Mr. Penniman when he was employed.

But time is limited, and let me pass now for a moment to the kind of evidence that they put into the record regarding Dr. Selders. This writing of Castle's based on what somebody named Higgins, whom nobody knows, says that somebody at Worcester City Hospital said that one of the Sisters said about him.

Just contrast that kind of miserable muckraking, uncorroborated, hearsay on hearsay, with the evidence which we have put into the record, and I ask you whether a doctor who is impressed with that kind of thing comes nearer than the Group Health Association doctors to violating true ethics. The conduct of a gentleman, regard for the Ten Commandments and the Golden Rule? Oh, no. All these facts we have gathered together in his favor were brushed aside and they content themselves with hiding behind the Castle letter, which comes some months after the hospital had acted against him, and the report from the Washington Academy of Surgery and the Washington Gynecological Society—organizations with high-sounding names—reports that could not have been written, as the evidence shows, following the tenets of Hippocrates, but the tenets of hypocrites, basing their recommendation on no interview with him, no chance for a hearing. No one had seen him operate; not even bothering to read his references in the hospitals; based, in the Washington Academy of Surgery, on this documentary evidence, a letter which they thought so damned him with faint praise that they did not consider his other references.

They call attention to the fact that Dr. Moore had not responded, when they must have known that he could not respond, when he was addressed at Hugo, Oklahoma, and was in Houston, Texas.

And the decision was reached, ladies and gentlemen, in a resolution by the Washington Academy of Surgery on December 10, as shown by the minutes, a resolution presented by Dr. Sager who was on the Hospital Committee of the District Medical Society, which said that they should consider his ethics, the ethics of the applicant—again, this same old word—as defined by the American Medical Association.

The Washington Gynecological Society was worse. No references were written to. No references read; no interviews; no seeing him in operation. Merely two miserable gossipy letters that any of us would be ashamed of—a letter from Berry to Bullard. There is no evidence that the committee even knew who Berry was. He was reporting some gossip he had heard about him in Worcester. And then there was the letter in which they place most of their reliance, which is the letter from Johnson which betrays on its face that it is nothing but hearsay, that Johnson does not know this gentleman; and the worst thing he can say about him is that he is the kind of fellow who is likely to get in most anybody's hair.

Have we not come to a sorry pass when all these high-sounding tenets are directed to the preventing of any chance of a man for a livelihood? And yet that is what this high-sounding society puts out as the basis of its recommendation against these gentlemen. Nothing more.

But the true situation was the treatment of the patients.

You have heard about the qualifications of Dr. Selders. I told you about Dr. Scandiffio, the Homeopathic and Sibley staffs and the fate that awaited him, without any whisper about his qualifications. You remember Dr. Price, a defense witness, who criticized Group Health Association after he left it and was confronted with his prior inconsistent statement when he was with it, and how he had applied to Homeopathic Hospital and had not received even an answer. He applied in the spring of 1938 and got no answer at all, and he was not admitted to any hospital in Washington during the whole period of the conspiracy; but on the day before the indictment was returned the Medical Staff of Garfield approved him for membership—one day before this indictment came down.

I told you about Dr. Lee and the report on the questionnaire from Homeopathic Hospital with regard to him—

"Future action regarding him awaits the action taken by the D. C. Medical Society."

You will recall Dr. Hulburt. He was not a member of the District Medical Society, but he had privileges at Georgetown. He was called in by the superintendent while he was down there, while he was connected with Group Health, and was told that he could no longer come into the hospital or have any cases there. Then he resigned from Group Health. It is a wonder they all did not. How Group Health Association managed to survey this kind of an attack I do not know. But he resigned in April 1938 and in May he was reinstated. Free of Group Health he now becomes a qualified doctor, I suppose, in the Georgetown Hospital.

He applied to Columbia Hospital, while he was a member of Group Health, for normal obstetrics, which means the ordinary delivery of babies without any complications at all. His application was tabled there, as the minutes show, so long as he was a member of Group Health Association; but after he resigned it became all right for him to deliver babies, and he was admitted into Columbia in June.

And that fine, upstanding-looking professional man, Dr. Halstead—was there a breath against his qualifications? He told you on the stand that he applied in the summer of 1938 to Georgetown, Sibley, Providence, Emergency and George Washington and, in the fall of 1938, to Garfield, but he was not admitted to any of them. Does it take from August until December to find out that Dr. Halstead is worthy to practice his profession in a hospital?

You will remember Dr. Richardson who testified that he resigned from Group Health Association for fear of losing his hospital privileges.

When you consider all those doctors who suffered the same fate, I ask you whether all this attempt to rest this case on some gossipy letters with regard to Dr. Selders being able to play musical instruments, and things of that kind, account for this unanimity. I wish I could quote to you, even at the risk of boring you a little more, minute after minute of those hospitals showing the real reasons regarding Group Health Association. I wish I had time to recall to your minds the effect this kind of thing has on patients, upon private citizens, upon ladies like Miss Sarah Abbott, knocked down on the street, taken to a hospital, nervous, suffering pain, wanting a doctor in whom she had confidence, and being told, "You can have our doctors." Or the case of Miss Stuart, sick enough to be hospitalized for three weeks at Garfield, and only permitted to have Dr. Selders there because they had not had time to get his revocation notice to him.

I wish I could recall to your minds Mr. Hardin, taken with an emergency case of appendicitis in the middle of the night and denied his doctor, told that he could not have his doctor in any of the hospitals. He is rushed there, and what is he confronted with? By a memorandum from the admitting office of Sibley Hospital, prepared by its admitting staff pursuant to directions, listing the names of every one of the doctors, including Dr. Brown, associated with Group Health Association. These doctors are not to be allowed in at any time.

I wish I could recall to your minds that dear old lady, Mrs. Austin, who was knocked down on the street and hurried to one of these hospitals receiving the same denial of free choice. And all this is based on ethics. One of them is that Group Health Association denies the free choice of physicians. I will ask you whether these patients' free choice of physicians was not seriously impaired.

I wish I had the power to bring to your minds the feelings that Miss Tew must have suffered when her doctor diagnosed a pain in the abdomen as an emergency case and was permitted to admit her. She was taken to her room and given morphine. Then, after she has gotten the morphine and the pain has subsided, a young resident or assistant resident who has been

practicing a year, I think it was, pressed on her abdomen, paying no attention to her blood count, which is indicative of infection and which read 14,500, which is double the normal, and paying no attention to her fever, and none of the other doctors bothering to come to see her—callers who called on the phone were told these things and her doctor in whom she had confidence was told it was not an emergency case. He had a right to bring her there if it was an emergency case. Oh, no. You can have these doctors and only these doctors. When she insisted on her free choice she must rise from her bed with the morphine effects still on her, nauseated and nervous, having nerved herself up to an operation, and she is permitted to leave the hospital in a half-fainting, nauseated condition.

Ladies and gentlemen, you have heard this evidence. You have heard the defense, whatever defense it has. I ask you, in the light of the evidence which I have not over-stated—I have stuck to these notes so that you might have confidence in me—I ask you, when you come to your deliberations, that you can conscientiously say that whatever may be your personal feelings, you can do but one thing; that this evidence convinces you beyond a reasonable doubt that the narrow issue—not the red herrings—of a concerted attempt and a plan to oppress by the means that I have stated was engaged in beyond a reasonable doubt.

ARGUMENT ON BEHALF OF THE UNITED STATES

GRANT W. KELLEHER

Mr. Kelleher:—May it please the court, and ladies and gentlemen of the jury: when I stood before you in my opening statement many weeks ago I told you that the Government would establish beyond a reasonable doubt that there is in this country today a large body of American people which either does not receive adequate medical care or which is oppressed by the heavy financial burden of the care which it does receive; and I can now stand before you and tell you ladies and gentlemen that not only has the Government established that fact, but it stands undisputed in the record in this case, and you must accept the fact as proved and undisputed that people with substantial incomes receive two and a half times as many physicians' calls a year, spend twice as many days in the hospital, as people earning less than $2,000 a year; that only 14 per cent of the more fortunate receive no medical care as compared with 50 per cent of those in the low-income groups, despite the fact that it is well established and well recognized that the low-income groups are far more susceptible to sickness and disease.

And so far as the uneven incidence of illness is concerned, you must accept as an undisputed fact that one tenth of the American people bear over 40 per cent of the total medical bill, while six times as many bear less than 18 per cent.

Those are the facts. Those facts rest on the doorstep of the organized practice of medicine; rest there because not only is there no evidence disputing the facts to which I have referred, but there is nothing to show that the private practice of medicine under the fee-for-service system has been able to cope with this serious social problem.

There is evidence in the record, however, that there are some 150 organizations throughout the country today making a sincere and conscientious effort to meet this problem. You have heard of some of them. You have heard of the Ross-Loos clinic, of the Endicott-Johnson plan, the Stancola in Louisiana, of the plans of the Northern and Southern Pacific railroads; and from the mouths of the defendants themselves, either in their correspondence or from that stand, you have heard it admitted that some of these plans are manned by competent doctors; that some of these plans have given good medical service.

What these plans are and what their purposes are you already know. Briefly, they seek to meet this social problem, which is very serious, first, by improving the quality of medical care and reducing the cost to the patient by combining the care in group practice, by both general practitioners and specialists, the effect of which is to give the patient the advantage of the joint knowledge of the group and, at the same time, to reduce the cost of the care by eliminating the unnecessary duplication of equipment and facilities which would inevitably result, as we know, if these doctors were engaged in private practice. It seeks to eliminate the heavy financial burden caused by the unpredictability of illness, by its system of periodic prepayment which entitles each member to complete and adequate medical care, within limits, irrespective of the amount of care he needs. It is group practice on a prepayment basis. Whether it will succeed or whether it is the answer to the problem with which we are faced today is not for me to argue or for you to decide. Suffice it to say that on the record in this case the intents and purposes of this plan cannot be disputed, and on the record in this case it is also true that there is nothing revolutionary, nothing radical, no new ideology involved in these plans. Prepaid medicine is over a century old; and the practical common sense appeal of group practice, the economies reached, the good sense of it, destroy any argument that there is anything extreme or radical about it at all. It has been indorsed by hard-headed business men, such as those men must be who run the Standard Oil Company of Louisiana and the Endicott-Johnson Shoe Company.

We have heard it said in this case that the medical profession alone is able to judge what is adequate medical care for you and me. On the record here I question whether the degree of Doctor of Medicine bestows any such ability with it. But assuming that it does, what is the answer of some of these far-seeing and progressive members of the profession?

We showed you the report of the American College of Surgeons, that body composed of eleven thousand of the leading surgeons in the country. What was their answer? They say prepayment plans furnish a reasonable expectation for providing more adequate medical care to the American people and that experimentation with such plans should be continued.

We showed you the results of a committee on the costs of medical care. Fifty leaders in economics, sociology, public welfare and medicine, twenty-five of them from the medical profession. What was the answer? Seventeen of those doctors endorsed the majority report which recommended experimentation with these plans. There is an answer from the profession itself to any claims that these plans seek to destroy the private practice of medicine.

We have in evidence Exhibit 104 for the Government which has been referred to as the prospectus for Group Health Association. There is no evidence to show that it directly ties up into the G. H. A., but it is sufficient to say that G. H. A. is a small scale model of what is described in this prospectus.

This prospectus contemplated a plan which would involve seventy-five thousand of the population of Washington. As you know, Group Health Association is far more modest than that. But suffice it to say that in this prospectus are detailed the objectives and the methods by which those objectives can be achieved by Group Health Association.

Let me refer for just a minute to the foreword in this prospectus, because here is what Group Health Association was seeking to accomplish and here is all that the defendants knew that it was seeking to accomplish when they first decided to oppose it:

> "The aim of this plan is to make available to Federal employees in Washington and to their families adequate medical care, both preventive and curative, to provide this care at moderate cost and to place that cost on a regular budgetable basis within the means of the group to be served."

There is the outline of the purposes of Group Health Association.

To achieve that purpose Group Health Association adopted the successful plans detailed in this prospectus and followed them—the plans of the Ross-Loos clinic, of Endicott-Johnson and of Stanocola. In so doing it decided that it would be necessary in order to achieve the economies which such plans contemplated to have a full-time salaried staff; and here is the plausible explanation of the reasons set forth in this prospectus which is in evidence:

> "The pros and cons of provision of service by a staff of salaried physicians have been carefully considered. The disadvantage of salaried service is that it does not permit the patient to go to any physician he may select, but limits his choice to the physicians who are members of the staff. It is believed that this disadvantage is at a minimum in the case of the population of Federal employees, since many, being newcomers in the city, have no affiliations of long standing with physicians. In any case the disadvantage is more apparent than real. Actually the average layman generally chooses his physician on the basis of hearsay and is not qualified to judge competence. With a salaried staff the patient receives care from a selected group of physicians chosen by a chief of staff on the basis of their professional qualifications and competence. Furthermore, only in salaried group practice is it possible to have a desirable degree of professional supervision of service and ready consultation of one physician with another. Finally, only on this basis can the economies flowing from organization be achieved."

It is plausible and reasonable; something about which reasonable men might disagree, certainly, but certainly nothing irrational or unreasonable about it.

So Group Health Association decided to incorporate in its prepayment plans the idea of a salaried staff of doctors.

Group Health Association was intended merely to give to the employees of an agency of the Federal Government the benefits which businesses like the Standard Oil Company of Louisiana, the Endicott-Johnson Shoe Company, the Northern Pacific Railroad Company and the Southern Pacific Railroad Company had achieved through similar plans—to give to the Government employees the same benefits that were given in the railroad yards and shoe factories of the country.

What was the attitude of the American Medical Association concerning these plans? I say to you that on the basis of the record in this case the conclusion which you must draw is inescapable: the American Medical Association opposed these plans as far back as 1932 and fought them with everything at its command. It did so because it had to do so. It did so because the governing body of the American Medical Association had declared that it must.

We proved to you that in 1933 the House of Delegates in formal assembly adopted, as expressive in principle of the views of the A. M. A., the minority report of the Committee on Costs of Medical Care, the report which opposed and violently criticized these plans. The American Medical Association violently excoriated the American College of Surgeons one year later through its House of Delegates for the report which that body issued endorsing such a plan; and in 1934 the same governing body of the American Medical Association adopted ten fundamental principles. They were called that by the Board of Trustees. That was done to control any experiment to supply more adequate medical care to people with limited means. One of those principles categorically prohibited group practice because it requried that any plan embrace within it all of the physicians in the locality to be served. It unequivocally forbade contract practice in these plans; and it is undisputed in the record at this time.

How, then, could the American Medical Association do anything different than oppose Group Health Association? And it did oppose it from 1932 throughout the period of the indictment to 1938. Doctors were expelled in Texas, California and Wisconsin. They were threatened with expulsion in Cincinnati, Ohio, for participating in these plans. Trinity Hospital lost its registration. The Milwaukee hospitals were compelled to exclude from their staffs members of the Milwaukee Medical Center.

There can be no real issue on the question of the attitude of the American Medical Association concerning these plans. As one of the doctors is quoted in the minutes, the American Medical Association and organized medicine have fought these plans tooth and toe-nail.

Ladies and gentlemen, do not believe for a moment that these constituent and component bodies of the American Medical Association were free to decide for themselves what was ethical or unethical. The House of Delegates had spoken; the Judicial Council of the A. M. A. had spoken and declared these plans unethical. The constitution and by-laws of the A. M. A. provide that the Judicial Council shall be the final arbiter on matters of ethics; and Dr. West told you that every constituent body of the A. M. A. except one, and every component body, had agreed to abide by those principles of ethics in the constitution of the Medical Society; and the Medical Society of the District of Columbia adopts those principles of medical ethics. The House of Delegates is the body which lays down the principles which shall control; and with the Judicial Council interpreting those principles of ethics it is as absurd to say that the Medical Society of the District of Columbia is free to interpret those principles, independently of the A. M. A., as it is to say that this court here may ignore the interpretation placed upon a statute by the Court of Appeals of the District of Columbia.

Now, let me come to the attitude toward G. H. A. I think the evidence shows beyond question—and I am going to try to demonstrate it to you now—that the American Medical Association and the Medical Society of the District of Columbia opposed this plan of G. H. A. from the moment they had the first inkling of it. The first evidence of knowledge is the letter from Dr. Ireland to Dr. Cutter in which he told of the H. O. L. C. scheme and said:

"The local doctors are going to be wised up."

And the evidence shows that they were. In the month of May there was a series of conferences between Dr. Glenn I. Jones and the defendants Christie, McGovern, and two others, and before May 16 when Dr. Glenn I. Jones had merely explained that this plan involved prepayment, with a salaried staff, these doctors had taken the position that they were opposed to it and that the Medical Society was opposed to it; that no doctor could take a position on the salaried staff of that organization and still remain a member of the society, and that the organization could not expect members of the Society to consult.

That, ladies and gentlemen, was as early as May 16, 1937, before there had even been a formal meeting of the Medical Society with reference to it; and the minutes of those meetings further tend to substantiate the position of the Government in this case, that the opposition to G. H. A. occurred from the start, and that the circumstances which were later developed and the facts which were later developed had no influence on the decision of these gentlemen to oppose this plan.

You will recall the minutes of the first meeting. At that meeting, which was specially called to consider G. H. A., Dr. Verbrycke got up and read this prospectus, and that was the knowledge which these defendants had.

After he had read the prospectus Dr. Mattingly got to his feet and said, "We have two weapons at hand: one, to forbid consultation, and, two, to deal with the hospitals by failure to put them on the approved list if they cooperate with G. H. A."

Then a committee was appointed, a committee of six, including the defendants Hooe and McGovern, with the defendant McGovern as chairman, to consider this plan in cooperation with Dr. Verbrycke's committee, the Committee on Medical Economics.

Bear in mind that here is what they had (indicating)—this prospectus describing Group Health Association. That committee reported through Dr. Verbrycke, three weeks later. What was its report? This was before they had ever seen, so far as this record goes, any of the representatives of Group Health Association. The report was this, that it involves prepayment; it involves a salaried staff. Therefore it is not ethical, and no member of the Society may have anything to do with it as at present constituted.

That was the report, as early as June 21, 1937. At the same meeting Dr. Mattingly rose again to his feet and got his suggestion across again, that the two ways of combating this plan were, one, by disciplining members, and, two, by dealing with the hospitals.

At this meeting it was also decided that Group Health Association should be invited to the next meeting of the Executive Committee. Mr. Penniman and Mr. Zimmerman came. The plan was laid before them. It involved prepayment; it had a salaried staff. They were told they were going to rely on the Medical Society for consultants. They were told how it was financed; and the H. O. L. C. had made an appropriation for two years to get it started. That is in the minutes of the first meeting with G. H. A.

What did the Medical Society members do? What could they do? They had prejudged that plan. G. H. A. did not know it, but the evidence now shows that they came over there to talk with the Executive Committee when that committee had already adopted the Verbrycke report as the policy of the Executive Committee, and had already decided that G. H. A. was unethical and that they were going to deal with it as "at present constituted." What more could they do than what McGovern did?—and that was to intimate that G. H. A. would not be acceptable, by calling their attention to the fact that it did not permit free choice of physicians.

At that same meeting the evidence shows it was decided to have another meeting between representatives of the Society and Group Health Association; that is, the board of trustees of Group Health Association. G. H. A. willingly agreed.

After Zimmerman and Penniman had left, the minutes show that in discussing the function of this committee that was to confer with G. H. A. it was explained that all that the committee should do would be to go over and feel them out—and those are the very words—feel them out and see if they would adopt a different plan, a plan which would involve the use of Medical Society doctors, drawn through a panel of those doctors. That was the purpose of that meeting. No question of cooperating with G. H. A. as it was. That was settled in June. Now the sole and only purpose was to see whether they could not change the plan, to take the heart out of it, and save for themselves the business which they feared G. H. A. would take away from them.

I think I have reached a point now, your Honor, where a recess might be taken.

THE COURT:—Very well. We will take a recess at this time until 1:20, ladies and gentlemen of the jury. Please take note of that.

(Whereupon, at 12:20 p. m. a recess was taken until 1:20 p. m. of the same day.)

APRIL 2—AFTER RECESS

The proceedings were resumed at 1:20 p. m., at the expiration of the recess.

Mr. Kelleher:—Ladies and gentlemen, when we recessed at noon, I had just completed discussing the fact that the District Medical Society, through its executive committee, had decided as early as June 21 to oppose G. H. A. unless it changed its plan of having a salaried staff, and that they came to the meeting of June 24 with their minds already committed to this policy. After the meeting of June 24 the next meeting of the executive committee was on July 12, and, as you probably know because it has been repeated so much, at that meeting of the committee Dr. McGovern submitted the second report of his subcommittee, the report in the form of a letter from Verbrycke to McGovern, and in that report were analyzed four alternatives of policy:

1. Approval.
2. A *laissez faire* attitude of let alone, see what happens.
3. Disapproval and active combat with every measure at our command.
4. Disapproval and the sponsoring, possibly, of our own plan.

Those were the alternatives of policy, and this is the way the report concluded:

"Approval is manifestly impossible. Disapproval and active combat is possible. Whether it is desirable without our own plan is another matter. Group Health Association could easily fail to be put on the approved list and lose consultation.

"The members of the staff of Group Health could fail to be put on the courtesy staff of the hospitals without the reason even being known. In fact, any of the above methods must be camouflaged to the nth degree."

And then the report goes on to point out that, in addition to this disapproval, perhaps some more desirable thing for the Society to do would be to formulate its own plan. McGovern at that meeting told the executive committee that his committee was nonplussed because it didn't know whether to fight G. H. A. with the weapons at hand or to adopt a plan of its own to combat the organization. Hooe told the meeting that as G. H. A. was then organized it would not be countenanced by the Society. Then Macatee said—Macatee, who is chairman of this committee to meet with the board of trustees of G. H. A., presumably to work out some form of cooperation—here is what he said at the meeting of July 12:

"I am going before those gentlemen and ask them whether they realize the threat to the success of the plan if it doesn't permit free choice of physicians. I am going to them and ask them whether they will accept the Society as the means for supplying this medical care."

Attached to those minutes is a so-called agenda for the conference with the board of trustees, and what other matters were to be discussed:

1. Whether the H. O. L. C. will accept the District Medical Society as the source for its doctors.
2. Whether it will consider abandoning its plan entirely if the Medical Society will adopt a plan of its own.

That is what the purpose of this conference with the board of trustees was. What they wanted G. H. A. to do was to abandon its plan because they had already committed themselves to the policy of opposing it if it went through as planned. That conference was held on July 26. At that conference Dr. Macatee called attention to the principles of medical ethics affecting contract practice, and he intimated most clearly that the Society would never approve of a plan as then organized. He asked them if they would not be willing to convert G. H. A. merely into a financial organization to collect dues and then to pay those dues to the doctors in the Society.

Verbrycke said the trouble with this plan is, "No free choice of physicians." There is the rub. "Will you consider using the Society, all the Society's doctors in your plan?"

And naturally Group Health Association politely ignored their request; ignored it because to eliminate this salaried staff would be to take the heart out of the plan.

A special meeting of the executive committee was called on July 27, and again Dr. Macatee arose and said:

"This organization as planned violates free choice of physicians. No member of the Society may have anything to do with it."

Does that sound like cooperation? And at the same time McGovern submitted four possible causes of action, and they were:

1. To fight the organization through the constitution and by-laws of the Society.
2. To have our own plan with our own doctors; or
3. To fight it in the courts.

Every alternative submitted an alternative of opposition. At the first meeting of the Society had with reference to this plan on July 29, Dr. Macatee and Dr. McGovern reported on the conversations they had been having with the board of trustees. What occurred at that meeting? Conklin tells us in a letter which he wrote to Woodward; the recommendations at that meeting, he said, ranged all the way from various conciliatory measures—and he obviously meant the adoption of some plan by the Society—from various conciliatory measures to drastic boycotts.

At that meeting another subcommittee was appointed to consider G. H. A. and report back to the Society as to the policy which the Society should adopt. That subcommittee reported to the executive committee on September 8 and September 27, and both times it reported that G. H. A. was unethical, and at one of the two meetings it reported that no member of the Society can have anything to do with this organization.

Does that sound like cooperation?

In between the meeting of the executive committee on September 27, and the second meeting of the Society concerning this matter on October 6, an event occurred which galvanized the Society into action; and that was the publication of THE JOURNAL article of October 2; the article in which the defendant Woodward, acting with the authority of West and Fishbein, wrote that the salaried staff of this organization would no doubt be on the outer verge of ethical practice, if not beyond the pale; that members of the staff of that organization would certainly lose professional status. That was the spark that set the Society off. Four days later Groover came in with his resolution, which the Society adopted, and in which the Society stated that it was in full accord with THE JOURNAL article, both as to its facts and implications therein, and that it approved the report as representative not only of the methods to be used in combating G. H. A., but as to the ethical responsibilities of the Society's own doctors.

On October 6, then, the Society, after months of opposition, months when the only question was how they would oppose this plan, on October 6 at the suggestion of the A. M. A., this Society adopted as final the policy which resulted in these proceedings here in Court today.

Now, Mr. Lewin already has explained the hospital boycott, and I should now like to devote what time I have left to a consideration of what we term the consultation and staff boycott by the Society. In order to clarify this I think I must explain something about the so-called white list issued by the Society on July 29. There is no dispute in this case that on July 12 the executive committee of the Society approved this list of organizations contained in Exhibit 45 for the Government; nor is there any dispute that that list went to every member of the local Society and to every hospital in the city of Washington; and, of course, there is no dispute that Group Health Association's name was conspicuously omitted. This white list supplied the cornerstone for the boycott of the organization of Group Health Association. It furnished the method, the means, by which every result automatically flowed from the issuance of this. From the stand here Dr. Macatee denied that this white list in any way had anything whatsoever to do with G. H. A. I say that the combination of circumstances in this case, when weighed with that denial, completely refutes it. Before I point that out let me give you a little history behind this thing. It involved what you have already heard referred to as chapter 9, article 4, section 5 of the constitution. Section 5 was originally adopted in January 1936. It provided that no member of the Society could have any professional relationship whatever with any organization the profits from which did not inure to the benefit of the medical profession. That, I say, is section 5 as adopted in January 1936; and before I come to the amendment of that constitutional provision in March 1937 let me dispose of one false issue which counsel has attempted to project into this case. Counsel had witness take the stand after witness and deny that that constitutional provision was adopted for G. H. A. and thus attempted to make it appear that some substantial issue of the Government was refuted by these denials. I tell you ladies and gentlemen now that the Government at no time in this case, either in the indictment, in the opening statement to you, or at any time in the trial, took the position that that constitutional amendment, or the original constitutional provision, was adopted for G. H. A. specifically. The position which the Government did take is this: that the amendment to the constitution substantially changed the original provision and it did, for that reason, because the original provision was limited to profit-making organizations. The constitution as amended provided that no member shall have any professional relationships with any organization unless approved by the society, by the executive committee of the society.

Thus, in March 1937, one month after G. H. A. was incorporated, that constitutional provision was changed so that it was possible for the Society to control its members with respect to nonprofit organizations as well as profit-making organizations. And, bear in mind, G. H. A. was a nonprofit organization.

Now, let us see what the evidence shows as to whether this approved list had anything to do with G. H. A. First, the events and facts preceding the adoption and approval of the list. The evidence shows that the subcommittee of the executive committee appointed to approve this list consisted of three doctors, two of whom were the defendants Hooe and McGovern, with McGovern as chairman. The evidence also shows that prior to July 12, when this list was approved, there had been three meetings of the Society and numerous informal discussions concerning G. H. A. It shows that the defendant McGovern was chairman of the subcommittee which was appointed to study G. H. A.; was chairman of the subcommittee which on June 21 reported that G. H. A. was unethical and he, serving in this dual capacity as chairman of the subcommittee studying G. H. A. and chairman of the subcommittee to prepare and approve this list of organizations. The evidence also shows that, at two of these meetings preceding the adoption of this list, Macatee made those statements now so familiar to us. The two methods to combat G. H. A.; the two weapons which might be used by the Society, and one of those weapons was to discipline members; to prevent consultation—the very thing which failure to place the name of an organization on the approved list would inevitably result in. Those are the facts preceding the adoption of this list. This list, as I say, was adopted on July 12, 1937. Before the discussion concerning this, there was an elaborate discussion concerning G. H. A., because it was at that meeting that McGovern submitted his second report, his second report in which he outlined the four alternatives of policy, and in which he said this failure to place G. H. A. on the approved list—and there was no approved list at the time—failure to place it on the approved list would automatically prevent consultation; that, at the same meeting at which this was adopted.

After the discussion of G. H. A., McGovern was called on to report as chairman of the subcommittee to prepare this list. He explained how the list had been arranged. He explained the effort which he had made to obtain the names of those organizations and doctors on that list, and then he submitted the list for the approval of the executive committee. The list was identical with that attached to Exhibit 45 for the Government, except in one important respect; item No. 10 read, as submitted by McGovern:

"All medical personnel connected with the Federal Government."

The minutes show that Macatee moved to strike the words "connected with" and substitute the words "employed by." With that amendment the list was approved. His amendment was obviously designed to remove any question that might arise from the use of the words "connected with"; that G. H. A., or its doctors, were approved by this list, and then in the same discussion concerning this list we find that one of the members of the Executive Committee inquired about the medical personnel of G. H. A., and Dr. Hooe replied:

"It is a corporation; it must be approved as a single unit."

This is at the very time that list was being approved.

But it has been said that the reason G. H. A. was not on this list was because they had not asked for approval. There are two answers to that. Nobody was asking for approval. The minutes show that McGovern was going out making inquiries himself to determine who should be approved. He stated that he had contacted in writing the local medical societies in Virginia and Maryland; that he had not heard from them and, therefore, was going to make further efforts to approach them. That is the best answer. The second is that Dr. Brown had asked for approval. He told the members of the Medical Society on June 24—fifteen days before this list was approved—that G. H. A. wanted to go along with the Society; that he wanted to become a member; that he thought the other doctors would.

What more could this Society want than that? We have also heard it said that G. H. A. wasn't on this approved list because it was not yet in existence. The facts are that G. H. A. had been incorporated on February 24; it was looking for a medical staff, and what better time could there be to approve this organization than now, when the members were being approached to join the organization? What was the purpose of that if it wasn't to advise the organization with which they could have professional relation. Certainly if there ever was an appropriate time to deal with G. H. A. it was then; and, we say, therefore, that when they left G. H. A. off that list they intended to deal with it; they intended to leave it off; they intended to do so because by that action they were able to prevent the members of the medical profession from having professional relations with G. H. A.

I think those circumstances are conclusive. But let me go a little further. At the meeting of July 29 Macatee addressed the entire Society concerning G. H. A., and there is a long paragraph in the minutes in which he outlined the plan of G. H. A., discusses it at length, points out that he considers the men who founded it honest, responsible, public-spirited men, who were trying to do something for their associates in the office; and immediately after this, and as part of his remarks, Macatee says this:

"The private list is now in the office of the secretary. I advise the membership to examine it carefully and familiarize themselves with its contents."

And he testified that the list he was referring to was Exhibit 45 of the Government. There is one other circumstance which completely repudiates any argument that could be made that this was not connected with G. H. A. In Exhibit 45 are three documents, two of which are letters addressed over the signature of Conklin to "Dear Doctor." The second of these letters merely calls attention to the fact that the executive committee had approved a list of organizations and quoted the section of the constitution dealing with that. That, one would think, would be adequate if the only purpose of this list was to call attention to the organizations on that list, but look at this first line:

"Also it may come to your attention that there is an organization or organizations interested in gaining medical personnel. Your attention is called to Chapter 9, Article 4, Section of the constitution,"

quoted in full; and Macatee, on cross examination, admitted finally that that letter referred, among other things, to Group Health Association, and he admitted that if the approved list was not adopted on July 12 as against G. H. A., it was directed against G. H. A. when it went out.

One other very interesting bit of testimony in this case. Woodward testified that he had been in Chicago at this time, the time this letter was mailed, and that he received this at his home, and then he said this: He said, "I took it to the office with me in the event that if I received inquiries about Group Health Association." How did he know this was directed against Group Health Association? He was here in Washington on July 14, two days after this was adopted.

As I say, the adoption and issuance of that list automatically prevented members of the Society from joining G. H. A., or from having any consultations with them or with that organization. It did so for the reasons I have stated, and it was intended to have that effect for the purpose of forcing G. H. A. to the wall. That is clearly demonstrated by Macatee's statement at the first meeting, that by preventing consultations the Society could combat G. H. A. He even went further. He realized what it would mean to G. H. A. if it was disapproved by a constituent body of the A. M. A., because he told the board of trustees of G. H. A., 'You must remember that the A. M. A. includes one hundred and six thousand of the one hundred and sixty thousand doctors in the United States. All of those doctors are bound by the principles of ethics." And he said, "That leaves sixty thousand doctors, and even that field is narrowed because many of those doctors are inactive and unavailable." He knew what it meant to withdraw from G. H. A. every member of the American Medical Association by the simple process of omitting that organization from that list issued on July 29.

The evidence shows, ladies and gentlemen, that there were seven doctors, seven doctors at least, who either refused to join G. H. A. because it was disapproved by the Society, or who resigned from G. H. A. for the same reason. The first is Dr. Glen I. Jones, contacted by Penniman and Zimmerman late in the spring of 1937. He was interested in this plan, but he decided to scout around among the members of the Society to learn the attitude concerning G. H. A. He came to two of the defendants in this case, McGovern and Christie. They told him that they disapproved; they told him that the Society disapproved; that any doctor—that no doctor could take a position on the staff of G. H. A. and still retain his membership; that the Society could and would refuse to consult, and he turned the post down because, as he testified here, he was afraid the organization could not succeed if the Medical Society disapproved it.

The evidence shows that Dr. Tribble refused even to give advice or assistance to Dr. Brown because the organization of G. H. A. was disapproved. Dr. J. Keith Cromwell refused to take a position as obstetrician because the organization was

not approved; and the defendant Neill was also approached by G. H. A. It seems a little ironic now, but Penniman, Zimmerman, and Russell went to him some time before the clinic opened. There is a dispute in the evidence as to what position was offered Dr. Neill, but Zimmerman and Penniman testified they offered him the medical directorship; Brown denied it; and the minutes show that Neill reported to a meeting of the Society that he had been offered the post as surgeon. It is immaterial whether it was the directorship or whether he was asked to be the surgeon of this organization. The important fact is that he was interested at first, wanted the post because it was the sort of thing he was doing for a utility company here in the city, but said he had to consult the Society because he was a member. What is important is that he refused the post and addressed the meeting of the Society, telling them that he had refused. Why, he even went so far as to decline to go to the banquet of G. H. A. on October 29. He even was so discourteous as to refuse personally to acknowledge the invitation and instead, at the direction of the Society, had his secretary acknowledge the invitation and decline in the third person.

Francis Richardson was employed by G. H. A. in December 1937 to take house calls on a part-time basis. He worked for four or five months. Then when one day he met Mann and McNulty at Sibley and had a conversation with them, he resigned from G. H. A. and testified from that stand that he did so because he was afraid he would lose his hospital privileges. That is No. 4.

No. 5, Fred Hammerly, a doctor in New York, was negotiated with in New York concerning G. H. A. He wrote to West and Fishbein for advice as to whether he should take it. West replied G. H. A. was disapproved by the local Medical Society, and then he went on to point out that the United States Attorney and the Corporation Counsel had held it was illegal, despite the fact that his letter showed that he knew Mr. Justice Bailey had held that the organization was lawful, and that in July. Fred Hammerly didn't come with G. H. A.; and I saved the best for the last: Drs. Lee and Scandiffio.

Ladies and gentlemen, I tell you that it is a remarkable thing that these facts which I am about to recite, some of the most essential facts in the indictment of this case, stand substantially uncontradicted and undenied. There is no dispute in this case as to the following:

On November 29, Mr. Hayes, the local representative of the A. M. A. here in the District of Columbia, wired Woodward in Chicago the names of the staff of G. H. A. just announced; wires him that on that staff were Drs. Lee and Scandiffio. Dr. Woodward turned that wire over to Dr. West. West wrote Conklin on the same day, stating Lee and Scandiffio are members in good standing of the D. M. S.

October 29-November 3, the C. C. and I. N. Committee cites those two doctors before it.

December 6. The first hearing of the executive committee.

December 10. Lee resigns before the second hearing.

March 16. Scandiffio expelled. No dispute about that.

You may take those facts to the jury room undisputed. Why, it is urged on you, and you are asked to believe that all that was intended in those proceedings was to discipline those doctors.

In his opening statement to you, Mr. Leahy said Dr. Scandiffio knew the rules of this organization. If he didn't want to comply with them, why didn't he resign, and the answer to that is this: that D. M. S. was out for bigger game than Lee and Scandiffio. The fact of the matter is that on Oct. 29, 1930 both Lee and Scandiffio did resign. They resigned on the advice of Brown, and because they feared disciplinary proceedings would be instituted against them, and the evidence in this case shows beyond peradventure that the Medical Society intended to deny them their right to resign from that organization. Why? In order to force them out of G. H. A.

As I have said, on November 3 Dr. Hooe cited Lee and Scandiffio to come before the C. C. and I. N. Committee.

On November 6 he and McGovern were in Chicago conferring with Drs. West, Woodward, Leland; and in the course of those proceedings, in the course of that conference, Dr. Hooe said this, in substance:

Two of the G. H. A. doctors are members of the D. M. S. They sent in their resignations. He knew it. He had the resignations then, as of November 3. They sent in their resignations, he said. The C. C. and I. N. Committee cited them to appear before it; they didn't appear, but one of them wrote and said that he had resigned, and then he said, "The C. C. and I. N. Committee unanimously recommend to the executive committee that disciplinary action be taken." That is on November 6—four days before they had withdrawn their resignations; resignations which that Society was obligated to accept if all they were interested in was in eliminating members who refused to comply with the rules and regulations. He added one other thing at that Chicago meeting. He said a third member of G. H. A., a third member of G. H. A., applied for membership in the Society but withdrew his application; that nothing could be done about him "at this time."

That is the answer to any contention that all these defendants were interested in was to clear the Society of people who would not comply with their rules and regulations. All know that what they were after was bigger game, as I have said. They wanted by threat, the threat that by these proceedings these doctors would become professional outcasts; they wanted to threaten Lee and Scandiffio with that in order to induce them to leave G. H. A. and unstaff that organization. The very arbitrariness of the hearing shows it. Even while that resignation was pending Hooe's committee recommended that the executive committee take action. One of the charges against these doctors was that they had failed to file their G. H. A. contract with the C. C. and I. N. Committee. On December 3 that contract was sent to Hooe by both Lee and Scandiffio. It was ignored, and that hearing proceeded. Lee's resignation is such a conclusive answer that it is hard for me to believe that anybody can make any serious contention that this expulsion proceeding was not directed at G. H. A. The first hearing was held on December 6. Lee testified at the hearing. The next hearing was scheduled for December 10. In between that time Lee received a telephone call from R. Arthur Hooe. He was told by Hooe that if he would resign from G. H. A. the proceedings would be dropped and his membership unaffected. On December 6 Lee appeared before the C. C. and I. N. Committee. He submitted his letter or resignation, or a copy of it, addressed to Dr. Brown. In that letter he wrote:

"Because of the circumstances I am forced to resign from Group Health."

The C. C. and I. N. Committee was meeting in one room of the Society building, the executive committee in another room. At the meeting Dr. Hooe addressed a letter to the executive committee stating that the C. C. and I. N. Committee had just been advised that Dr. Lee had resigned from Group Health and that, inasmuch as the charges against him were based on the fact that he had a contract with Group Health, the C. C. and I. N. Committee recommended that the charges be dropped. The letter was taken from the room in which the committee was sitting to the room in which the executive committee was meeting. It was read to the executive committee in full, and then the minutes show this:

"When it was definitely ascertained that Dr. Lee was no longer with G. H. A., Dr. McGovern moved that the charges against him be dropped. Seconded, passed."

That disposes of Dr. Lee.

The proceedings continued against Dr. Scandiffio three nights, I think, with the defendant Reeves presiding as chairman, and a few days after those proceedings concluded, Conklin wrote a doctor by the name of Hale:

"Dr. Lee has resigned from Group Health; Dr. Scandiffio has continued with Group Health. He no doubt will lose his membership."

He did, on March 16, 1938.

Let me now touch briefly on the boycott against consultation. The principles of medical ethics provide that in serious illnesses doctors should request consultation. The Medical Society knew that Group Health Association would depend on outside consultations. In the October 2 article of THE JOURNAL Woodward wrote that G. H. A. would be handicapped by the difficulty rightly to be experienced in obtaining qualified consultants; and was it handicapped?

Mr. Penniman, late in November, came to the defendant Neill and said this: Mary Frances Stewart, our technician, became seriously ill one morning and was taken to one of the local hospitals. Dr. Schoenfeld was called in to operate. Dr. Schoenfeld, a member of your Society, refused to operate at first until he had learned that this patient was entered by Dr. Lee as his own private patient. Penniman was shocked. There was a warning to Neill of the seriousness of this consultation boycott. There was a warning that the risk involved was far too great to justify enforcement of the provisions of this Society's rule. Did Dr. Neill observe that warning? Let's see. In March of 1938 Dr. Price had a patient seriously ill with coronary thrombosis, and on March 24 that patient became so ill they decided to call in Dr. Thomas S. Lee, one of the prominent heart specialists in the city, and what was the result? Dr. Lee instructed him, "I can't consult with you; I can't see that patient in your presence because you are G. H. A." That was Lee's response.

Kirkpatrick wrote a letter to Lee inquiring whether Lee had stated the fact correctly to Price, and received a response, in substance, substantially to that effect but saying that the specialist had seen the patient in the absence of Price. Now, what is the value of such a consultation when face to face contact and exchange of ideas between the doctors is the purpose of the consultation? It is true that the patient got well, but no thanks to the Medical Society.

Dr. Price took the stand, and although he denied on direct examination that there had been any interference with him with respect to consultation, he admitted in substance, on cross examination, the facts which I have related concerning Dr. Thomas S. Lee. He also testified that a few weeks after this incident he had in G. H. A. clinic a woman, an elderly woman so ill with heart disease he was afraid she would die in the office of the clinic. He called Dr. Thomas S. Lee and received the same response. Price further testified that after that, after that there were probably other instances when he would have liked to call somebody into consultation, except for the experience he had had.

Those are the instances in this record. They show how effective, how ruthless, the enforcement was of this consultation boycott. They show that the cardinal principle of ethics, that the welfare of the patient shall be the paramount consideration, was thrown to the winds, was scrapped to enforce the other provisions of the constitution.

Early in 1938 there were various rumblings in the Society because there were circumstances that indicated that some of the members of the Society were secretly and surreptitiously cooperating with G. H. A. Mattingly, on February 2, sought to put a stop to it by introducing a resolution which required the appropriate agency of the Society to take immediate steps to ascertain whether members of the Society were parties to any secret understanding with G. H. A. This resolution was referred to the detective bureau of the Society, the C. C. and I. N., chairmaned by the defendant Hooe; and then the witch hunt among the membership started. Hooe did everything except put on a false beard and dark glasses. Secret telephone calls, in which he warned members that they were suspected and would be cited before the C. C. and I. N. His telephone rang incessantly with calls that Dr. So and So was helping G. H. A. Neill helped him on it by giving him a signed statement which I think said implicated two of the members. He was so zealous that he even had the Society pass a resolution prohibiting members from accepting checks from G. H. A., but finally after he urged members time and again to get evidence, get evidence, "hearsay evidence won't do, I must have positive evidence of the violations," he reported to the Society that he was unable to get reliable evidence, and the Mattingly resolution was tabled, but Mattingly wrote that this threat of action had corrected this clandestine operation by members "of our suspected body," and the tabling of that resolution didn't stop Hooe. He worked on; and then he got his man. He got him just as Lee and Scandiffio, and that doctor was none other than Dr. George B. Tribble, whom you saw on the stand.

What did Hooe find? In May 1935 he found that six months before Dr. Tribble had operated on Louie Gilstrop, the son of a member of G. H. A.; had operated on him for an acute mastoiditis. Dr. Scandiffio, the charge was, had been permitted to be present for a few minutes during the operation and, in addition, after the operation, Tribble had written to Dr. Brown concerning the facts of the operation. That was the charge. Tribble appeared before the C. C. and I. N. Committee. Hooe told him that constituted collaboration with G. H. A. Think how far they had gone by 1938. The mere writing of a letter to the medical director was prohibited by the C. C. and I. N. Committee. The C. C. and I. N. Committee found him guilty, perhaps unwittingly, and recommended disciplinary proceedings.

Then Tribble got busy because he was scared. He got affidavits from everybody and they confirmed his statement that it was a private case; that he had not helped G. H. A., and the executive committee let him off with a warning from Sprigg that he must never do that thing again, and on his promise that he would not collaborate with G. H. A.

Ladies and gentlemen, do you wonder that such is the fact, that G. H. A. was having difficulty in operating? Neill, in the winter of 1937, December to be exact, had stated, "I think we can break this organization entirely," and he was speaking of G. H. A.

McGovern in April stated in the Society meeting, "G. H. A. is licked. It is nothing but a bubble."

Why, ladies and gentlemen, it is a miracle that the doors of that clinic were even kept open. Doctors denied hospital privileges, refused consultation, beset by resignations. How could any organization possibly give adequate medical care under circumstances like that, and when these gentlemen stand here now and try to defend this case with the contention that the care is inadequate, that merely proves that they accomplished what they set out to do. That was their aim and they had achieved it partially. Hurlbut, of course, and another member of the staff came there as assistants. Lee was overworked. He became discouraged and left. Who wouldn't? That that organization was able to keep a single member of its staff is hard for us to understand.

One other matter. Let me come to one other matter before I close. An excerpt from some of the minutes. The first is the very significant report of Verbrycke, or rather of McGovern, on June 12, 1937. Let me read to you a few paragraphs from that report, which demonstrate that what the defendants were seeking to do was to drive out this threat, this competitive threat to private practice here in the District of Columbia, and that is all they were interested in, and that accounts for every move that was made; and here is a document which reveals it to you:

"The present H. O. L. C. corporation is only a minor consideration. (*a*) Either innumerable others will follow, or (*b*) a large, all embracing organization will succeed all the smaller enterprises.

"The first eventuality, innumerable others, is not of great concern to us. Competition will kill them, and since they can't be large enough to supply a proper quality of medical care and hospitalization on their own account, subscribers will withdraw."

In other words, we can compete with these small organizations; we do not have to worry about them. We do not have to worry about the quality of medical care; subscribers will come to us. Those plans need not be considered, but listen to this:

"However, if the second eventuality should occur and one single, large cooperative to take in all Government employees should be formed, the considerations are entirely different and we must be prepared to admit the following:

"1. With size and a single large cooperative, its financial success is assured.

"2. It can secure enough personnel of good quality, even if not the best, either locally or imported, to assure its success from the patients' standpoint.

"3. Its own medical center and hospital can be obtained.

"The Medical Society must therefore adopt a definite policy toward the cooperative problem as a whole."

That is what they feared. They feared the success of this organization. They feared its quality of medical care would be adequate. They feared it would have the funds to go on. So they feared that if this organization got large enough and succeeded, it might withdraw from private practice Government employees who had been going to the defendants, and that is why Woodward wrote. And that is what he wrote on September 1 in his report to the board of trustees. He said, after calling attention to the fact that Government employees constituted a large proportion of the population of Washington, that G. H. A. might, according to its certificate of incorporation, seek to withdraw from the ordinary practice of medicine and cover into a group health insurance or group practice scheme and treat them through physicians hired for that purpose. He said:

"The effect of the withdrawal from private practice of even one half that number of persons, all of whom are able to pay for medical service, would materially diminish the incomes of the physicians in private practice in the District of Columbia and render it necessary for them to increase their charges or sacrifice the practices they have built up and go elsewhere."

And so, ladies and gentlemen, when you heard various remarks in the minutes by the speakers on the floor of the Society, you can attach to those remarks the significance which they really deserve. When you hear these matters, give them the significance which the Verbrycke report of July 12, and THE JOURNAL article, require.

Dr. Thompson, chairman of the executive committee in the Society, says:

"We must look to the future. These plans all threaten the coming generation of physicians."

McGovern:

"I look upon this G. H. A. plan as coming in and interfering with my business. I expect to be in private practice for another twenty-five years, and I do not propose, if it can be helped at all, to have this organization interfere with my work and income. What are you fellows going to do about it?"

There is the answer. There is the answer to free choice of physicians; to public policy; to the rest of the principles of medical ethics.

Ladies and gentlemen: Let your verdict be the answer to these defendants who would hide those purposes in the shelter of the Hippocratic Oath. I thank you.

(Thereon there was a brief, informal recess, at the conclusion of which the proceedings were resumed as follows:)

ARGUMENT ON BEHALF OF THE DEFENDANTS

WILLIAM E. LEAHY

Mr. Leahy:—If your Honor please, and you ladies and gentlemen of the jury, before I begin to sum up for the defense may I take this opportunity to say a word of thanks to you. You have been very kind. You have sat here with patience and attention and you have listened for two months to perhaps the most boring, tiresome testimony that any jury was ever called on to listen to. Necessarily, from the type of the case as it was presented by the prosecution—so many papers, so many documents, so many minutes, so much of what somebody said ten years ago, eight years ago, five years ago, and three years ago, with nothing but reading—I dare say you hoped that some day there might come an end to it.

Now it is necessary for me to stand here and bore you further with a repetition, perhaps, of what you have listened to for two months; and I dare say that sometimes your minds were in a delightful state of confusion where you wondered just where all these documents happened to fit into this particular picture that you were called on to look on, and then, as jurors, to decide.

You have just heard the oldest profession in the world castigated as though its members were common criminals. You have just heard every motive which has actuated a doctor in the practice of the ideals of his profession dragged down into the common mud and mire of cheap commercialism. You have just listened to a castigation of men who have been drawn into this court room as defendants, the like of whom no jury has ever been called on before to sit face to face with for two months.

You have heard two organizations of professional men which have had for their ideals the protection of your health and mine, the protection of the health and the welfare of the United States, condemned as if they all ought to spend the rest of their lives in disgrace.

There must be some reason for such a thing; there must be some reason why men are thus accused. We are all human, after all. We all have known the medical profession. The medical profession stood by every one of us when we came into this world, and some one of them will be standing beside our deathbed when we leave it. We know that doctors are only human, and we know that sometimes they are actuated by motives which we do not approve of, just as lawyers are, and no one regrets that more than the practitioner, because, after all, the profession of medicine has been inspired by the highest ideals under heaven, next to the ideals of those who attend your sick souls.

Why was it, therefore, that this heat was put into the argument in order to arouse you so that you could not review this testimony as jurors with calm deliberation?

I will tell you the reason. It is a reason which every lawyer uses when he cannot talk facts. It is the reason which every lawyer employs when he knows he has not a good case. It is the reason which every advocate employs to try to inflame the jury and get it away from the issues, in order that it may draw you into an unjust and an unfair verdict.

We do not need to employ the anger that counsel employed. We do not need to talk about honest men as lawbreakers. We do not have to employ language which says that every one who disagrees with us is a crook. We can stand here and sit here, as we have for two months, and look all this evidence calmly in the face and arrive at a verdict which we know is fair and honest and just.

An analysis of this testimony, ladies and gentlemen, will show you that the cause of your being here for two months was given you by the first witness on the witness stand, two months ago, and the answer to these charges was given by the last witness who appeared on the witness stand the last day we took testimony in this case.

I want you to go back with me for just a few moments in your minds and try to recollect with me the testimony of the old gentleman who came down here as the expert from Boston—Dr. Hugh Cabot.

Why, those men—and I am including now the defendants—those fine officers of the American Medical Association, these doctors who are members of the District of Columbia Medical Society, know more about the practice of medicine in five minutes than these lawyers could tell you about in five years. It has been their life work. They spent ten years to prepare for their practice, and then they pursued that practice; and for us lawyers to stand up here and talk to you ladies and gentlemen about the cost of medical care and the distribution of medical care is nothing but nonsense. Those men, including Dr. Hugh Cabot, could sit on that witness stand and tell you more about the theory and practice from actual experience—not from the standpoint, now, of one of the experts whom they produced, who has never done a day's work in a hospital from the practical standpoint and who, since 1920, has always lived off the income handed to him by some fund engaged in theoretical studies.

Those men know the practical side of life. They know what the actual practice of medicine means. They know whether you can get good medical care one way or another way—not from a theory, not out of a book, not out of a class of individuals who are drawn together to study. They know it from cold, hard facts. They have seen examples of the lack of good medical care. They have nursed back from illness to health those who have not had proper medical care. They know the reasons why. And in endeavoring to lay a foundation back there, when I asked you to go with me in your recollection, the question was asked of Dr. Hugh Cabot, laying a foundation for this G. H. A.—

"Doctor, is there any danger in these groups from the interference of a lay board?"

The answer was a rather unexpected one. He said, "Yes; there is."

It was the interference of the lay board of G. H. A. which put you ladies and gentlemen in this jury box. If G. H. A. had left this matter to that grand old man sitting right there now in this court room—Dr. Brown—you would not be here. But it was due entirely to the fact that Zimmerman, Penniman and Kirkpatrick had determined in their minds that they were going to do something. And then Zimmerman spent about two days, if you recall, down at Stanocola, in New Orleans, and he came back with all the knowledge in the world about group medical practice.

Penniman told you on the witness stand that he became connected with this matter as early as January 1937. Kirkpatrick came in a little later as the second president, but was on the first board of trustees. Those three men, the lay board of trustees of G. H. A., have brought you into this jury box when, if they had followed the advice of Dr. Brown, the Medical Director, there would have been no trouble whatsoever with G. H. A. and none of the squawking complaints that you have listened to here that remind you in retrospect more like children crying than as men who were honestly trying to seek and practice a lofty ideal and ambition.

Dr. Cabot warned them. He said, "Yes; the interference of lay boards of trustees is extremely liable to happen in groups of this kind." It did happen.

Now, let us grow up with the baby for a while. Zimmerman had been down to Stanocola. Before he came to work for the H. O. L. C. he had been with some oil company out in the West. And, ladies and gentlemen, let us not have our minds confused about this group practice or these industrial groups.

Do you remember Mr. Laux when he was on the witness stand, who worked in the department headed up by Dr. Leland? Do you remember that he told you that he personally had studied four thousand such plans. You might think G. H. A. was the only plan that had ever been put on foot; you might think nobody had ever heard of such a plan before. Mr. Laux, their own witness, said that in the four and a half years while he was studying plans under Dr. Leland's supervision, he had probably written from eight thousand to ten thousand letters.

They went through Mr. Laux' files from A to Z. You saw on the corner of some of the letters which were read here, and perhaps you may have forgotten it, a numeral. I tried to bring it to your attention. I said, "What does that stamped numeral mean on the corner—705, 1,006?"

"That is the number of the documents which the F. B. I. withdrew."

This case has been combed from the start out of documents; and I want to ask you this, as a man talking to you, the jury, if it was not left for the defense to produce the facts. They produced minutes and letters, all one sided; not the letter written in the first instance, but the reply, so that they could draw from that letter any interpretation which they wanted to put on it; and it was left to us to go out and comb Wash-

ington, find nurses, find young interns to tell you properly what had taken place about Miss Abbott and the rest. But we will discuss that later.

We had to go and bring their own doctors to the witness stand. They would not even bring a doctor from their own clinic on that witness stand, and we had to do it for you.

In other words, the facts in the case were developed from the defense; and that is exactly what your attention was being drawn to when Mr. Laux was here, because he had examined four thousand plans similar to this, and yet they have the temerity to stand up here in front of you and tell you that the American Medical Association was opposed to group practice from the beginning.

Why, Dr. Cabot is a member of the American Medical Association this very day. Dr. Cabot told you he had his own clinic in Boston. The President of the American Medical Association has his clinic in Boston. The Mayos were presidents of the American Medical Association, and they have perhaps one of the best known clinics in the world.

Yet the prosecution tries to persuade you that over this period of time the American Medical Association was opposed to group practice. Bosh! Nonsense! And they know it. They know it is not true.

Dr. Cabot had been on the stand hardly an hour and a half before they shifted the whole picture of the prosecution. In their opening statement they tried to make you think that we were opposed to the Mayo clinic, that we would have nothing to do with the Mayo clinic; that the G. H. A. was formed like and similar to the Mayo Clinic, because they knew that practically every person in the United States has heard of the Mayo clinic, and that if they could persuade you that we were opposed to something like the Mayo Clinic, then they knew they were talking about something about which you knew and it would be very effective.

You were told in the opening statement that group practice such as G. H. A., had come up in the last ten years. Dr. Cabot described to you that group practice extended back over a hundred years. Of course it has. Nobody denies that. There have been groups of doctors operating; but this particular kind of group practice, Dr. Cabot said, was known only in the last decade; it was still in its experimental stage. In fact, he said that he had himself collected together a committee of doctors to study the principles under which this particular kind of group practice should operate. I asked him the question, if you will recall, "Who were on that committee, Doctor? Did you have only doctors?

"Oh, yes. There was only one who was not a medical doctor, and that was a Ph. D."

He appeared on the witness stand. He was not a medical doctor. He was the one who was acting as secretary of the committee. But when that old gentleman from Boston wanted to collect together a group of doctors to study how to formulate a group practice plan, did he get three gentlemen working in H. O. L. C., or did he get five doctors who knew something about the distribution of medical care and what it should be?

On his own clinic in Boston does he have a lay board interfering between the patient and the physician? It is all doctors, and they are doctors who have qualifications in the hospitals. Every one is qualified for hospital practice.

They asked him, "Oh, but didn't you have some difficulty with your local medical society?

"Oh, no; none whatsoever."

There is not any reason why this case should have been here in this court. The whole thing is so unnecessary, to bring doctors to the humiliation of a trial as criminals when it is all due to the interference of the lay board of G. H. A.

And I am bringing you back to the point, now, where we started, in order to show you just exactly how that interference came about.

The argument was just made to you that the District of Columbia Medical Society, back in June, in an executive committee meeting, came to a position of determined opposition to G. H. A. I will tell you that the testimony is that as early as January 1937 G. H. A. came to the determined opposition of the Medical Society.

Why do I say that? You remember, probably, one of the doctors who they said was drawn away from G. H. A.—Col. Glenn I. Jones. You remember when Colonel Jones was on the witness stand. He is the first doctor who was approached to take the position of Medical Director of G. H. A. You remember that Mr. Penniman and Mr. Zimmerman went to see Surgeon General Reynolds of the United States Army, and Surgeon General Reynolds referred them to Colonel Jones, because Colonel Jones was retired; he had the proper qualifications, and Surgeon General Reynolds thought that he would make an excellent director. At that time Mr. Penniman and Mr. Zimmerman asked Colonel Jones to draft a plan of organization, and Colonel Jones said that the first thought that hit him right between the eyes was that no plan of distribution of medical service to anybody can possibly succeed unless we have the best doctors in the community.

Now, it just happens that the best doctors belong to the District of Columbia Medical Society. We do not apologize for that. If all of the best people collected together into an association in order to advance the interests of medicine—and you will remember that the first article in the constitution of the American Medical Association was and is only to promote the art and science of medicine and the general public welfare. That has been there since 1847. I wonder if they accused us in 1847 of having put that article in there because in 1937 Group Health Association was to be formed. In the District Medical Society we have the same purpose, to promote the art and science of medicine and the general public welfare.

But they say, no, that is not our purpose. It is cheap commercialism. We are afraid of competition. We are afraid of a dollar that somebody may take away from us. We are afraid of a group that might get together and that would not have our rent to pay.

We adopted those constitutions, one in 1819 and the other in 1846, operating as the sole guide as to ethics, and their morals and their standing have now been accused before you of being cheap commercialism, or being in cheap competition as if they were selling tobacco or cigarets off a shelf, as if they had no thought in mind that when they are sitting at your bedside, after all maybe they are interested in seeing you get better. Maybe they are willing to miss a baseball game or theater if they can sit beside you and maybe bring you back to health.

No; they want to wash that out of the picture. The true picture, the true purpose for which these men are organized covers every act they did in this case, as you will come to see.

To return to Dr. Glenn I. Jones. I do not know anything more about the practice of medicine than you do, not one whit or one bit, and I would not propose to stand here and tell you that I knew anything more about the practice of medicine than you know yourselves. But as men and women we know that if someone is going to distribute medical care, I don't care whether it is an experiment or an accomplished fact, it has got to be done by good experienced men. It is a pretty dangerous experiment, toying around with human life. Wait to see whether the experiment succeeds. The success of the experiment probably is buried over in the grave yard. We never know. But we do know this, that when people are ill, when they need professional care, then in the words of Dr. Glenn I. Jones, we need the best in the community to back up and head such an organization.

What did he do? He did just what you would do if you were called on, if you were a doctor, to head an organization. Would you not go around and talk with some of your friends whom you had known for a long time, who were young practitioners when you were? Would you not go and say to them, "Well, Bill, what do you think about this?" Or "Jack, do you think we can make it go? Is it sound?"

He did just that thing. He went to see Dr. Christie. He had known Dr. Christie twenty-five years. He went to see Dr. Groover. He had known him for twenty-five years. He went to see Dr. Charles Stanley White. He had known him for thirty-five years. Not a single one of those gentlemen was talking for the District Medical Society or for any purpose except sitting down there with Col. Glenn I. Jones, their old friend of twenty-five and thirty years' standing; and they talked the matter over, as he said, for about an hour, and all three of those men said they did not think that the scheme as outlined would receive the support of the District Medical Society because they did not think it would work. And to repeat Col. Glenn I. Jones' statement, "Right then and there my participation in that scheme began to cease."

What did Jones do? Jones went back and told Penniman and told Zimmerman.

Now, let me ask you this. After all, we all want to be fair. We do not have to indulge in excoriation of anybody. We do not have to call names. But you can sit there and I can stand here, and be fair about this matter.

Don't you think that if Penniman and Zimmerman wanted to start a medical organization in the District of Columbia they ought to have talked with some doctors? Am I asking something that is unreasonable? Don't you think that an organization which is going to give medical care to the people of the District of Columbia ought to have the advice and information of the doctors of the District of Columbia? Dr. Cabot said so.

What does he do? Immediately following the information which Colonel Jones brought to Zimmerman, he calls for a

meeting. And where? In his apartment. With whom? He has Admiral Rossiter from the Navy; he has Reynolds, Surgeon General of the Army; he has Cummings, of the Public Health Service, and he has our own Dr. Ruhland, our own District Health Officer—the same office that Dr. Woodward once held here. They met in the apartment and Jones again discussed it with them and he again told them it was absolutely necessary, in order for this scheme to succeed, to have the very best doctors, and that anybody who dared to start an organization to administer to the public health without the very best doctors they could get would be perpetrating an imposition and a fraud and ought to be opposed and stopped in the public interest.

What happened? From that meeting Colonel Jones dropped the entire organization.

Surgeon General Ireland, on the 27th day of March, wrote to Dr. Cutter and said that they had discussed this matter and concluded that it was an entering wedge to state medicine.

I said, "Colonel Jones, do you think state medicine is in the public interest?" And he said, "Absolutely not."

Major General Ireland used the phrase, "They dropped it like a hot cake."

Colonel Jones said, "No; I didn't use that phrase."

But he did drop it like a hot cake.

Is it not strange that out of this great idea, this thing that exploded spontaneously, you never have seen Admiral Rossiter on that stand; you have never seen Surgeon General Cummings on the stand, you have never seen Dr. Ruhland on the stand? But you have never seen a man in a responsible position who, as early as March 1937, knew the inside of G. H. A., who connected himself with it whatsoever.

Even after Colonel Jones had told Penniman and Zimmerman that he had information that these finest of our surgeons and doctors in the District of Columbia could not agree with the scheme did they even then go to the District of Columbia Medical Society? Did they call up a single District Medical Society doctor? Did they have a conference with a single soul? Not one. They went ahead, determined to put that scheme through, because Zimmerman had spent a couple of days down in New Orleans—can you imagine that? Supposing all of us right now walked over to the Endicott-Johnson shoe factory, or went over to the Ross-Loos Clinic, or even walked over to a hospital and saw it in operation. Do you think any one of us would know how to run that institution? Every last one of us has been in a hospital at some time. What do you know about its running?

But Zimmerman came back, and he knew it. But in March, down to the time that Dr. Brown was employed, not a single man in the District of Columbia was approached to become the Medical Director. Not a single word of advice was sought. Not a single bit of information was given until in June Dr. Brown was appointed the Medical Director.

There was not a single one of these defendants, not one of these organizations that as an organization or as a defendant knew a single thing about Glenn I. Jones until about the 26th day of May, when Jones himself, I presume, feeling as a medical man, having spent most of his life in the United States Army, having been an experienced surgeon and physician—I suppose he felt that somebody in the District of Columbia who knew something about the practice of medicine ought to be advised of what was going on.

Now, they sneer at Surgeon General Ireland who said he was going to wise up some of the local doctors.

Every little word, every sentence in letters between old friends, is given another meaning. Ireland had been on the committee out there with Dr. Cutter for years and was writing as one friend to another, and then four or five years later they pick up his letter and they want to put a sneer where none was meant. You know what Surgeon General Ireland referred to. He referred to the visit of Glenn I. Jones to Dr. Gerry Morgan's office on May 26, 1937, when Colonel Jones told Dr. Gerry Morgan, Dr. Macatee, Dr. Christie and Dr. Groover what was going on in the city of Washington, and about these men inspired with a lofty ideal to do humanitarian good to a large group of citizens, but who refused to tell.

I want to ask you now, in all fairness, don't you think that all of the doctors of the District of Columbia are rightly interested in a group which is going to take care of thousands or hundreds of thousands of people in the District of Columbia?

I think it was one of the saddest bits of testimony in this whole case when Dr. Groover was referred to, and it was difficult to restrain your honest indignation when you heard the motives of that man dragged across the floor of this court room as cheap commercialism. He sat down there on July 26 and told them, "I am through. I have not more than four or five years to live. Therefore I have no personal interest in what you do. I want to tell you that the medical profession of the District of Columbia will not be threatened if you know that the quality of medical care will be assured.

He was a prophet of his own passing; and even though he could not testify or talk to anybody, nevertheless those words of that dead man stand out here as the answer of an attorney who would come before you and try to degrade the entire profession of the District of Columbia and its practice by saying that such men as these, men who have been our honored citizens in this city ever since you and I have been here—most of these men on whom you are sitting in judgment now have practiced medicine more years than you have lived. There has not been a finger pointed at these men until this G. H. A. finger was pointed in scorn and condemnation. These men have taken care of more people, perhaps, in the District of Columbia than all the G. H. A. membership put together.

But we will return to that meeting of July 26 before the board of trustees of G. H. A. The meeting on the 26th day of May, when Dr. Glenn I. Jones made up his mind months before to have nothing to do with the project, was the first information which any one in the District of Columbia, in the District Medical Society, had heard, with the exception of Drs. Christie, White and Groover, when Glenn I. Jones first asked their advice about the matter.

Can we not differ in our opinions? Has it come to this, that because G. H. A. is involved we cannot have a difference of opinion about it? You know that somewhere, written into the Constitution of the United States, is the fact that our citizens shall enjoy freedom of speech and freedom of the press. Under our form of government we still have a right to think; we have a right to express our thoughts; we still have a right to write and print. Newspapers still write as they think they should. Magazines still publish articles. You and I read them. There are disagreements among them, but we still do not go to a concentration camp or back up to a wall because we happen to disagree with someone else; and unless in our speech or unless in our writing we are violating the law, unless we are doing something which we ought not to do in violation of the law, then we have the right to talk, thank God!—because that is a right for which men died in order that you might be sitting here in this box as twelve citizens, jurors, to find a verdict in this case.

These men are criticized because they wrote letters saying, "We don't agree with G. H. A.," and counsel say that they ought to be condemned as criminals, that they should be pronounced guilty. Guilty of what? Guilty of exercising a higher right than the anti-trust law gives anybody. They are exercising a right for which men fought for years, and this today, perhaps, is the only country in which we have that right in the freedom of its full exercise and its full enjoyment.

What is the next thing we see after May 26? Dr. Macatee comes before an Executive Committee meeting of the District Medical Society.

Some of you men, I suppose, belong to some organization; I don't know. But if you do, you know that the organization has committees, and you know that the committees are given jurisdiction, as we call it, or given authority to go out and make an investigation here and make an investigation there and make a report. That is what their right is and that is what their duty is. Their duty is to make an investigation and to make a report; but they cannot bind the organization. Not until the organization to which you belong votes to adopt the report and to bind itself by the report, does the report become of any importance whatsoever in so far as the organization itself is concerned.

Dr. Macatee made a report, and Dr. Verbrycke produced what was the first information which the Executive Committee of the District Medical Society had about Group Health Association. This, now, is the Group Health Association which has been represented to you as wanting the cooperation of the District of Columbia doctors, and this document has marked on it "Confidential. For private use only." Here is a copy of it (indicating) which was introduced in evidence. This is what Dr. Verbrycke produced. There is no use holding back these things with any air of mystery about it. There is not anything in this case that we cannot explain.

Is it not strange, if all of these men over here (indicating defendants), honored citizens of this community, were engaged in the commission of a crime? Is it not strange that if they were you would find all these letters? They would have been in the mouth of a furnace, or they would not have been written in the first instance. Men engaged in the commission

of crimes do not leave a stack of documentary evidence as high as this railing, that it took, I think, two weeks to read to you.

Did you find any documents that Penniman or Zimmerman had written—or Kirkpatrick? I am going to contrast that with you before we get through. I want to show you the difference between honest, straightforward men who are honestly trying to find out what to do in a situation which suddenly confronted them in this fashion, and the situation of men who built up a record for themselves and who did not write, because if they should write somebody might find what they had written.

This document is marked "Confidential; for private circulation only." Why? Why should it be confidential if it is something in the public interest? If they are now engaged in performing this experiment which, as Mr. Kelleher said, was a further advance in medicine where the fee-for-service practice—I think that is what they like to call it—had fallen down, what in the world are they circulating it so confidentially for? Wouldn't you be interested in knowing about it? I would, if I could get my doctors' bills paid for $3 a month; I would be there in a minute, and I think most everybody else would. I would like to know about it; I would be only too glad to know about it.

But that is what was produced, and the Executive Committee sat down and looked this over. No one had seen it before. It contained some very interesting matter. I am not going to read it to you; it would take too long to do so. It states that the smallest number of enrolled persons employed, supporting a medical clinic or group, should be approximately ten thousand. But they started right out with nine hundred. They had all these things in here to look at. They sat down and discussed the matter, and then they say that Dr. Macatee said, "We have two weapons." Oh, how they like to seize on that language! It was contained in an abstract of minutes of that meeting. But they entirely forgot something.

Dr. Macatee appeared here before you. He is one who perhaps had more to do with Group Health and the attitude of the District Medical Society toward it, up until the 6th day of October 1937 than any other single person.

I showed him the words in the report. He said, "No; I didn't use that language."

And you remember the young lady who took down the minutes of the meeting of the Society. She told you that it was almost impossible for her to get all that was said; the best she could do was to transcribe what she thought was stated, and then Dr. Conklin came along and he corrected it. If it did not jibe with what his recollection of it was, then it was corrected. In the Executive Committee Dr. Conklin alone acted, and he was writing down what he thought someone else said.

Dr. Macatee told you what he did say, and he said he did not say any such thing.

Counsel handed the minutes of the June 1st meeting to Colonel Glenn Jones, and with a great deal of expectancy and assurance they pointed out what the minutes said, and they said, "Colonel Jones, will you kindly look at this place here and tell us about that?"

Colonel Jones looked at it and said "I don't know what it means. Who is supposed to have said it?"

And yet he is the man who is supposed to have said it.

There is a danger in the type of testimony upon which they ask you for a conviction in this case, because they are minutes which were written back three years ago, some of them almost four years ago. Not what people said, but what people thought was said. But right then and there Mr. Kelleher told you that the Executive Committee of the District Medical Society took a firm, determined purpose that it was going to restrain G. H. A.

Let us see what happened. What did it do? Did it appoint a committee to try to find ways and means of keeping G. H. A. from coming into existence? Did they appoint a committee to go around with black glasses and a beard and try to find out what G. H. A. was doing, in order to stop it before it started? If they wanted to restrain G. H. A., the time to have done it was then. That is when they ought to have worn black glasses and beards. The whole Executive Committee should have had them and played detective—such as Dr. Hooe was painted to you, when his telephone was so busy that he was almost out of breath and the phone was hiccoughing call after call.

They appointed a committee to investigate and report back, and the committee made its investigation. And then these men who wanted to restrain and to destroy G. H. A., these men who did not want this group to come into existence, these men who did not want a doctor on the staff, these men who had refused to consult with the doctors after they were appointed, these men who wanted to shut the hospital doors to all G. H. A. patients and doctors alike—what did they do? They invited G. H. A. to come up and talk to them.

Conspirators? Is that the way conspiracy starts? Is that the way opposition is conceived and then put into practice?

They invited those men to come over, and they said, "All we know about you is what we have heard from Glenn I. Jones and from the document marked 'Confidential; for private circulation only.' Come over and tell us what your scheme is, will you?" And they accepted that invitation. Penniman, Zimmerman and Dr. Brown came over to the District Medical Society. And here comes the first disagreement in the testimony in this case. Dr. Brown, the first Medical Director, a gentleman who has already lived as many years as I hope each one of you will live, who has spent one of the most useful lives in the practice of his profession that any doctor could possibly spend, who, when he goes down to his final reward will go down with a life well spent back of him—he told you that he believed in the group practice of medicine on a prepayment plan, and he said, "I still believe in it."

And then I asked him as the first medical director, the man who opened their clinic, the man who purchased their equipment, the man who was formulating their staff, getting their nurses together, seeing that the clinic was properly laid out—I asked him if he remembered the occasion when those three men went to the District Medical Society.

Up to this time the District Medical Society had done nothing, because it had no information upon which it could act in any way. Those men were honestly seeking a bit of information about which they might advise the District Medical Society. And Dr. Brown said, "Yes. We all met for a dinner at the Mayflower Hotel, and it was agreed among us that we would tell them nothing, and just before we went into that meeting the admonition was repeated—'Now, remember: tell them nothing.' In other words, let them do the talking, but don't tell them anything."

Mr. Penniman and Mr. Zimmerman say that that was never said. The fact of the matter is that they told them nothing. In the broadest kind of language they answered questions.

Why a meeting at all? Why should the three of them go to dinner just before they went up to the District Medical Society? Why didn't they do what you or I would have done—go up there and meet with the District Medical Society and go in? Why should they all meet to prepare and map out a course of conduct at this meeting over at the Mayflower Hotel before they walked over to the District Medical Society office? Why should they then say, "We will tell them nothing"? And that is just what they told them—nothing.

Mr. Penniman told you on the witness stand—and don't let anybody think that Mr. Penniman is not about the smartest witness you have ever seen on the witness stand. He has a magnificent presence; he is a fine looking gentleman, and he is well schooled in experience. He used to sell investments for Blythe & Company at 120 Broadway. He knows how to weigh his language. He is a good salesman and he knows how to make a sale. He told you that he was particularly interested in getting Dr. Neill as the Medical Director. Dr. Neill was the president of the District of Columbia Medical Society, and he said that he and Zimmerman and Russell went up to Mr. Childress' house; that Mr. Childress was the liaison officer between H. O. L. C. and Congress; that Childress was a close personal friend of Dr. Neill, of long years' standing, and there they asked Dr. Neill to become Medical Director.

They never asked him any such thing. When we called Dr. Brown, Dr. Brown said, "Why, I was already the Medical Director."

They would have you believe that Dr. Neill refused to become the Medical Director of G. H. A. because it was along this line of restraint of G. H. A., when the Medical Director already appointed was sitting right in the group with them; and they never denied it.

You know, there is not so much in this case as there is out of it. There is not so much evidence brought to you ladies and gentlemen as there is that which has been restrained and pulled back. It is not the restraint of G. H. A.; it is the restraint of testimony, because where the testimony is not in, then you can argue inferences. That is the danger of circumstantial evidence, because with only circumstantial evidence before you, then the one who can draw inferences the most convincingly from what is in is the one who is liable to convince you that his interpretation is correct.

We could have found out whether he was there or not. They could have found it out in the easiest way in the world. We called Dr. Brown. We were not afraid to produce anybody on their staff, and everybody that we could get from their staff we brought in. They did not. Where is Mr. Childress? That is the man who can settle that difference in the testimony. There is the man who could tell you, the liaison officer between H. O. L. C. and Congress, the first assistant to John H. Fahey, the man who proposed the conference. If Dr. Brown is not accurate in his memory, why have we not had Mr. Childress here to tell us about it?

Now Mr. Kelleher says that it makes no difference, because he did not become surgeon. It makes all the difference in the world, because they ask you to rely upon the recollection of Penniman and Zimmerman over against the recollection of Dr. Brown, and you know that if Dr. Brown was the Medical Director and was sitting there in the conference as Medical Director, they never asked Dr. Neill to become Medical Director, and he never refused, because he was never asked.

They say it was a long, extended meeting, and they were told that H. O. L. C. had financed it for a couple of years. How much? For what purpose? What was the amount?

You remember that on cross examination I asked the witness if he did not remember sitting there with his pencil and paper figuring out the number he had in the clinic and how economically they could give the service which they said they were going to give, and what they were charging, and he said, "Yes; I do remember that."

What were those men trying honestly to find out? A way to restrain G. H. A.? Or were they trying to find a way of killing it off before it started? Almost the last thing that was said at that meeting was, "If we can get together on this proposition I think we will have attained a great social service."

And then these men who wanted to restrain G. H. A. and to destroy it, said, "Won't you entertain a committee from us so that we can talk it over once more? Won't you let us come down and sit down with you and discuss this matter further? Let us see if we cannot do something."

Finally they said yes. The committee which had been appointed was still functioning. One of the arch conspirators, Dr. McGovern, was on that committee; and Dr. McGovern wrote on July 15 to Mr. Penniman and said, "Mr. Penniman, won't you supply us with a copy of the by-laws? Won't you supply us with the contract under which your proposition is being financed?—because if it is not being properly financed it cannot do what it promises to do. Won't you give us the contract between your members and your association?"

Dr. McGovern wrote that letter and it is here in evidence. Did Penniman write a reply? Not much. He was too smart. He called Dr. McGovern, because we do not trace telephone messages except in our memories, and one man's memory is as good as another's when he comes to the witness stand.

Then they arranged a luncheon. He said, "Come on down and we will talk it over at lunch." And McGovern went down. When he went down did he meet Penniman? No. He met Penniman and Zimmerman—so there could be two who could remember against McGovern, who would be alone. Did they supply him with a copy of the by-laws? Did they give him a copy of the contract? Did they supply a copy of the contract between the subscribers and the association?

They supplied him with absolutely nothing.

And yet he had the audacity on July 26 to suavely state to the committee when it came down there honestly seeking to obtain information, "We laid all our cards on the table."

All but three that he held up his sleeve, the three important ones.

And then I asked him on cross examination, with reference to when Dr. Macatee was talking to him down there as one of the committee, "Don't you remember that he raised the question of the legality of G. H. A.? Didn't he say that in most of the states of the Union it had been held that a corporation could not practice medicine because a corporation cannot take a license out to practice medicine?"

And I asked him, "Don't you remember Dr. Macatee said, 'Give us some help on this, will you?—because there never has been a decision in the District of Columbia upon it.'"

He said, "Yes; I remember. We had the idea that you wanted the contract and you wanted the by-laws and you wanted this other information so you could test the legality of G. H. A."

And he positively and absolutely and purposely refused to give that information or any assistance or cooperation to that committee of reputable, honest, decent men here in the District of Columbia, just as positively as it was possible to give a refusal, with those honeyed and mellifluent words; and when the meeting was over he thanked them for having been down there. But what did they get?

Dr. McGovern reported back that he could not get the contract; he could not get a copy of the by-laws.

Mr. Penniman was on this witness stand before you—and I wonder if he thinks that you cannot see through these things—and he said, "I knew they could get a copy of the by-laws, because we had several hundred of them printed and they were distributed to the members of G. H. A." I said, "Did you supply a list of the members to the Medical Society so that they could go to somebody and get it?"

"Oh, no."

His excuse for the nonproduction of the contract was that he would have to get the H. O. L. C. board's approval to surrender it. And then ten minutes later he told us that it was in connection with Dr. Macatee's statement, that they figured that perhaps Dr. Macatee was down there trying to trick them, trying to find some excuse to get something on them.

Now, ladies and gentlemen, this business of restraint has been the bugbear of G. H. A. in the minds of Penniman and Zimmerman ever since the beginning. That is all they have talked about. They said, "Oh, you are trying to restrain G. H. A." And as far back as July 26 Penniman is so suspicious that he won't give a copy of the contract or of the by-laws to Dr. Macatee.

You saw Dr. Macatee on the witness stand. He was there two days. Do you think he is a crook or a trickster or a conspirator? Or is he a man who is practicing his profession here in the District of Columbia and has for forty years, who has held the highest office which his own District Society could confer upon him, who is a delegate to the House of Delegates of the American Medical Association for the District Society, who has high office in the hospitals of this city? If that is the kind of man they say they thought was trying to trick them, I wonder if what Dr. Trible said is not apropos: "Evil to him who evil thinks."

Those men went down there trying to get a bit of information in order to report back to the District Medical Society. All that the District Medical Society had done was to appoint a committee to try to get information.

In the talks back and forth in some of these committee meetings you will find that A said this and B said that. They had a right to discuss it among themselves, just as you in your jury room will discuss this matter, and finally the only effect of it all will be a verdict. It will not be what you said or the other one said, if someone wants to attack the verdict and say, "Oh, you said this" or "You said that."

They bring in the minutes and say, "Oh, the Doctor frankly said 'We have two weapons which we can use.'"

Can they show that he repeated that on July 27 when he reported what had occurred at the meeting on July 26?

They had no more information. They did not know what to do. So they called a special meeting of the District Medical Society. This is the first time the District Medical Society had met, because it was summer. Nobody sits around in meetings in Washington in the hot summer time. And they met in a special meeting in the latter part of July and they reported to that meeting, and here were the conspirators, McGovern and Macatee, and Dr. Macatee said that he thought they were high-minded, civic minded men and that they really believed that what they were trying to do was right. McGovern made the same kind of statement.

And those are the men who are charged as conspirators, trying to restrain G. H. A.

Dr. Macatee said that these men perhaps had heard of other cases in which some medical society had taken action against them, and maybe that was the reason why they did not want to give the Medical Society the information requested. Of course he did not know what Penniman had told you. If you sought the world over you could not find a more honest, fair statement than Dr. Macatee made or Dr. McGovern made.

Does that show ill will? Does that show a purpose to destroy? Let Mr. Kelleher answer it now. He says that away back in March or April they had formed the idea of trying to restrain and destroy G. H. A. But the chairman of the committee, the man who was appointed as the spokesman for the committee, reported back that he thought these men were high-minded and fair minded. Now these doctors sit over here as defendants charged with a conspiracy to destroy G. H. A.

If Dr. Brown had been let alone, if Dr. Brown had been given the right to go among the hospitals, as he started to do; if Mr. Penniman and Mr. Zimmerman did not think they knew more about medicine and its practice than Dr. Brown did, who had been in charge of Government hospitals for twenty

years, under the Veterans Administration, who knew more about hospitals in five minutes than Penniman and Zimmerman will ever know; if they had let Dr. Brown alone there would not be any such difficulty as this.

Don't you think I am reasonable in asking you this question? If a group of men wanted to start a clinic, if they wanted to hire a staff of doctors—they must have known that somebody was going to be sick, because nobody would come to a clinic unless he was sick, and some of those in the clinic would need hospitalization—do you not think it would be reasonable that the first thing they would do would be, as Dr. Cabot did when he started his clinic, to get members connected with various hospitals, so that they would have hospitalization? There is not a word about trying to arrange with the hospitals for G. H. A. They have been talking about it since January and they refused to go to the only people who know what practicing medicine means. They refused to go to the hospitals in the District of Columbia and ask the hospitals, "How do you feel about this? What can you do about it? What are your rules with regard to practice in the hospitals?"

And then when they found that out they could go ahead and open up their clinic in accordance with rules that had been in effect in the hospitals, some of them for fifty years.

You will see that every hospital in the District of Columbia is named in the indictment as a conspirator, every one. There is nobody in the United States who ever said anything about Group Health Association who is not a conspirator.

Here are these hospitals in the District of Columbia who are manned by an administrative board composed of the ablest and best known and most civic-minded men in the District of Columbia, who give of their time freely in trying to keep the hospitals going. The staffs of those hospitals are manned by the most experienced surgeons, who do not get a farthing for what they do for the poor that come in there and on whom they operate and for whom they care. As Mr. Kelleher says, that is all they are there for. They have been doing that all these years, every single hospital. A hospital cannot talk; it cannot write; it cannot speak. It only acts and speaks and writes through its administrative board. Yet every one of those fine business men and civic-minded men are all conspirators. Of course they tried to excuse them by saying they were in a tough spot. I would like to see them try to put that group of men in a tough spot, and see how far they would get. I would like to see them go to those boards and try to impose and coerce and put pressure upon them about something which they did not think was for the best interests of the hospital. What would they get? The answer that Mr. Drayton gave, who has been a member of the bar of this court for thirty years. He gave you the answer on the witness stand last Friday:

"We didn't care about G. H. A. We were thinking of what was best for the hospital."

They don't want you to believe that. That is "*n*th degree camouflage." They want you to believe that Charlie Drayton didn't mean that when he said that. He is on the board of Children's Hospital, and he said when he took action he took action because it was for the best interests of the hospital. The administrative boards are the final boards to approve or disapprove. But to weave in this conspiracy, to try to put into the frame this agreement, combination, confederation among those societies and defendants, they have got to put in the hospitals, because if the hospitals are not conspirators there is no conspiracy, because all they say about the staff members cannot be true unless the hospitals wilfully said, "We won't do it because we are going to restrain G. H. A."

Now I have brought you down to July 29, so far as the District of Columbia Medical Society is concerned. Macatee, McGovern, Groover and Verbrycke have all come back and reported. They came back empty-handed.

What happened then, after this report? Did the District Medical Society become aroused? Did it fulminate in its rage and say, "Now we will go after these men; now we will ruin this Group Health Association; they refused to give us this information. Therefore we are suspicious; therefore we will destroy them and restrain them?

What did they do? They still kept the committee on and said, "We will ask them if they won't try to get some information so they can bring it back to the District Society, so the District Society may know something about G. H. A."

That is the conspiracy. That is the confederation among this group of doctors who have forgotten every ideal they ever tried to measure up to, who have debased every motive which prompted and motivated them in the practice of their profession. Now they come down to this cheap commercialism based upon the dollar and their fear of losing a dollar that is inspiring everything they do!

What did they do? They said, "Well, boys, stick it out. See if you can find something and bring it back."

And the special meeting adjourned.

What did each one of the committee do? They stayed on and finally they had another Executive Committee meeting, the result of which was read to you from the minutes, because official action was taken there. They reported for the approval of the Executive Committee and for its action, and the Executive Committee, in substance, moved that the report, after adoption, should be presented to the District Medical Society at its next regular meeting, which was Oct. 6, 1937. Dr. Macatee presented his report and the report was that they would still wait to see if they could get some information about G. H. A.

Now, that is everything which the District Medical Society did up until Oct. 6, 1937. They could have done a lot. I will tell you how they could have restrained G. H. A. They could have gone around and tried to persuade people from becoming members of G. H. A. They could have gone through the Government departments and tried to persuade membership away. They could have gone down and tried to frighten them away. They could have gone to those who were members of the staff and tried to frighten them. Was there any threat made against Dr. Brown when he was at the meeting on July 26?

What is it that they are trying to do? They are asking you to convict on suspicion. If there was any purpose or intention on the part of the District Medical Society or the American Medical Association to destroy G. H. A., they could have done everything which these 850 members here in the District of Columbia could have conceived could have been done.

Did they ever go to a single doctor and say, "Don't join that staff"? Did they ever go to a member of the G. H. A. and say, "Resign"? Did they ever do a single thing to Dr. Brown when he appeared before them as the Medical Director? Don't you think that if that old gentleman had been restrained they would have brought it out when he was on the witness stand?

Let us speak of the facts, the facts upon which we know that men do things. I told you that I wanted you to weigh the words which were spoken down there in that meeting of July 26. But before I come to that, may I give this answer to Mr. Kelleher's argument. He told you that the American Medical Association had been opposed to group practice. I will discuss this Milwaukee situation and the Ross-Loos clinic. But just look at this (indicating). Here are the minutes back in 1932, and this is Dr. Leland's committee, and Dr. Leland is one of the arch-conspirators. What is he reporting to the House of Delegates?

"In many phases of medical economics physicians must act as an organized group in order to accomplish the most worthy ends. Individual action along these lines will not be as effective or as free from error as collective organized action."

What does he say back there in 1932?

"The profession has for its prime object the service it can render to humanity. Reward or financial gain should be a subordinate consideration. The practice of medicine is a profession. Although business methods and economic principles are essential to the orderly conduct of the financial phases of the practice of medicine, all such methods and principles must serve rather than dominate the profession, must be secondary to the primary object of the profession and must conform to the accepted principles of medical ethics."

They don't like that phrase "medical ethics." They don't like a profession to have standards of practice. They don't like to have those principles promulgated and have it said that if there is any doctor who wants to become a member of the Society he must comport himself as a gentleman.

One of the finest doctors who appeared in this case, a former president of the American Medical Association and who is not, I hope, construed to be a conspirator except as he is still a member of the American Medical Association, told you that the principles of ethics were, after all, only the application of the Golden Rule in the practice of the medical profession.

But now sport is made of those ethics. They are called the Ten Commandments, because back as far as 1934, in complete refutation of the argument made by Mr. Kelleher to you, the American Medical Association declared that the practice of medicine under contract is not unethical per se, but it laid down ten principles—not ten commandments—and one of them was with reference to solicitation.

Do you like your door being knocked on in the morning, and when you answer it you have some one there say "We will take care of you for $1.50 if you become sick"? You say

"What do I get?" You do not know that the salesman is getting perhaps 75 cents of the $1.50; and he will paint just as pretty a picture to you as a Hoover salesman ever painted in your life, and before you knew whether you wanted the Hoover or not, you got it.

The Medical Society does not like advertising. It does not like you to pick up the morning *Post* or the *Evening Star* and see an advertisement in it saying, "Bladder removed, Ten Dollars today. Appendix Removed, $5."

They say, "No; we don't like that." Those are two of the most important. Do you think they are unreasonable? Or do you think that doctors, after all, should give the profession a reputation such that people will seek them out, and not have them try to peddle their wares on the street like doughnuts or like oranges?

A man who has practiced his profession as he should, who has been a gentleman and who has preserved the standards and the ethics and the moral principles which guide him in the profession, does not need a newspaper advertisement. He does not need any solicitor. They say that if it is wrong for one man to do it you cannot make it right by having five try to do it.

Those are the principles which were laid down on contract practice of medicine in 1934. I suppose the American Medical Association foresaw that today, in this good hour in 1941, some one would be making sport of those principles because the A. M. A. was accused of trying to restrain G. H. A.

THE COURT:—We will stop when you are ready, Mr. Leahy.

Mr. Leahy:—Very well, your honor.

THE COURT:—The jury will be excused until tomorrow at the regular time.

(Whereupon, at 4 o'clock p. m., the court adjourned until Thursday, April 3, 1941, at 10 o'clock a. m.)

APRIL 3—MORNING

Mr. Leahy:—If your Honor please, and you ladies and gentlemen of the jury, may I say that I am going to try to be just as speedy as I can in closing up the few remaining points that are to be discussed with you and which were advanced by the prosecution in their summation.

I think yesterday at the close we had been over a great portion of the facts in the case, which had led us up to about Oct. 6, 1937. You will recall that we had discussed the beginning of G. H. A.; how it was conceived; how it was put into effect. I had gone over with you the discussion which was held in Mr. Zell's apartment, where the four high officials representing the Public Health Service and the Army and Navy were present, and I had remarked to you that it seemed extremely peculiar, in fact incomprehensible, why it was that when a medical association was being formed not a single advised man of the Medical Society of the District of Columbia had been called in to that discussion. I think perhaps I had omitted to call to your attention that at that time Colonel Jones said that there seemed to be a difference of opinion, but he thought that gap might be bridged by a discussion with members of the District Medical Society. But still not one member was called in, and the strange part of it all is that the only person other than those representing the Army, Navy and Public Health Service was a member of the Twentieth Century Fund; and then, after that we discussed what had taken place, and you will recall from Dr. Macatee's testimony that from the first day of June, when the Executive Committee of the District of Columbia Medical Society first learned of G. H. A., down to the sixth day of October all that the District Medical Society had done was to appoint a committee to meet with the members of G. H. A., and then after the meeting of July 26, and report of that committee on July 29, to continue that committee in existence and to file its report, requesting the District Medical Society to continue an attitude of investigation of G. H. A. when, on October 6, the resolution which we will come to discuss in a few minutes, was passed by the District Medical Society.

Inasmuch as that resolution was based to a large extent on a publication in the American Medical Journal let me now just for a few moments discuss what the American Medical Association had done up to that point. You will recall in the opening statement I told you what the American Medical Association was. I told you that you would learn about it from the testimony in this case and you have.

You found it is an incorporated, nonprofit organization. Its membership is made up of the members in the county societies, in the state societies; that its organization depends for its legislation on the meetings of the House of Delegates. That House is composed of representatives from these societies and also representatives from the Army, Navy and Public Health Services in the United States. For all the world, the American Medical Association is a reconstruction of our own national form of government. Everything which is done is done to prime and probe the medical opinion of the United States in order to accomplish the purposes and objects of the Association, to wit: to advance the art and science of medicine and protect the public health. Those meetings, as you were told, occur yearly at the different places where they meet in convention. Some of the minutes of the meetings of the House of Delegates were read to you at the trial. There was one which was read going back several years ago, with particular emphasis on the question of the power of the American Medical Association, and that read to you was the report of the financial condition of the American Medical Association; and, perhaps, it may still be argued that this was a corporation which was making a million dollars a year, and, therefore, it had tremendous power based, as it was, on a membership of a hundred and ten thousand in the United States. The remarkable thing about it is this. If there is one cornerstone on which our government is based it is the will of the majority, and one hundred and ten thousand out of one hundred and sixty thousand have agreed on a course of conduct as proper to guide them in the standards of practice of their profession. Isn't that something persuasive for you to think about? If that great army of men who have selected as their life work the care of the public health and of the individual citizen think that the health can be advanced, protected and secured by a given course of conduct, isn't it a bit persuasive that perhaps one hundred and ten thousand men can't all be mistaken? And it is those one hundred and ten thousand men who have declared themselves in those principles of ethics, and you have heard them questioned—I won't say ridiculed, but certainly not honored in argument—that the ethics were moral principles. They are moral principles only as every decent, honest standard of living is a moral standard and principle; and if we do not have those in our hearts no matter what we do,—whether we are the most humble mechanics, the most capable lawyer, the most learned physician—if we do not have the desire to do a good job of our work; if, in our heart and soul we do not have the desire to do what we are called on to do in accordance with the highest standards of honesty and decency, then we are not worthy of a place in that calling, whatever it may be.

There is no question of morals. The argument was made that when such and such was considered to be unethical it was, therefore, immoral. Not in the sense it is a violation of the ten commandments with respect to the principles of medical ethics any more than a violation of the ten commandments is condemned in relation to whatever we do. They are simply the standards which a hundred and ten thousand physicians have said over the centuries should guide them; and if practically the universal voice of medicine has said those principles shall be its guide then who are we to say it shall not be.

What do they do with this million dollars? The million dollars is spent on what? That organization, for the first time to you, as it was to me, has been put under the light so that you may know what its activities are and have been in the past.

That report showed they employ approximately six hundred forty-one young ladies, clerks and specialists. I think you saw about twenty-five of them here on the witness stand. They are secretaries, each man here indicted as a defendant having three or four. For what? To answer inquiries written to them from the people all over the United States asking and wanting to know what is best to do. Then they have bureaus. They have bureaus which protect the public health in accordance with the purpose of their organization; every last one of them headed up by a Christian gentleman and an experienced doctor. Not a doctor manager; not a doctor lawyer; not a doctor economist, but a doctor each one of them who has spent his life for the public good, most of them in the public health service of their state or else in charge of medical schools; men who know the theory and the practice of their profession, and who have come there, not on their own solicitation, but chosen by their fellows because they thought they had within them those qualities of leadership to guide them and that dependence on which the profession could rely.

I told you they answered inquiries. I made that statement from the testimony. Did you hear Mr. Laux, when he stated that within the four years he alone, as one member in Dr. Leland's bureau, had answered about ten thousand letters. Mr. Simons said that they answered two or three or four almost every day; that is almost a thousand a year. And they pick eleven letters out of ten thousand written by Laux, and they pick eight out of about an equal number of Mr. Simons. Don't you think that if there had been this tremendous conspiracy, with all the searching of the files of the American Medical

Association, they would have found more than eleven letters written by Laux, or eight letters written by Simons which they could select as replies written—and everyone of those replies were written in response to an inquiry from a member of the public—and, as Mr. Laux told you, were answered after investigation with the advantage of time and knowledge and experience gained, not of one case visited and investigated by Mr. Simons, but of four thousand such cases.

Let me impress on you this, ladies and gentlemen. The statement was made from this witness stand, in reply to the argument which is made by the prosecution to you that this body of men who have no other interest in life than to see to it that the public health of this Nation is preserved and protected against the quack and charlatan; the man who would sell us all down the river by his representations that he can cure, and to whom the sick man would give his last dollar if he thought he could be cured of an affliction which he knows leads only to the grave,—those men with that only purpose, will be happy and will open with outstretched arms and welcome any system, any method of the practice of medicine which can give to the entire people adequate medical care at the cheapest cost available.

Why, to bring it down to our doctors, our own home town folks, the first letter which Dr. Verbrycke wrote to the Group Health Association said:

"I have just heard about this scheme. We have set up our medical-dental service; we have set up our group hospitalization service to take care of the people in the District of Columbia who need medical care and are having difficulty in obtaining it because they can't pay the price of doctors' bills."

And, none of us like to pay doctors' bills. I don't like to; you don't like to any more than we like to pay lawyers' fees. Nobody likes to pay a lawyer or a doctor. Why? Because the man who receives this service doesn't know what goes into it, just as I don't know what goes into it when a doctor feels my pulse, examines my heart or lungs and suddenly he says I have something wrong with me, and I must go to the hospital. He has come into my room; he has looked at me; tested my wrist, felt my pulse, and I had to go to the hospital; and if I didn't go to a hospital I would die; but all I recall is he came to the house once and then he was right. But here is what is hard, as Dr. Groover said down here in that meeting on July 26. He said "I know it is hard to persuade a layman," and we are all laymen, "that the doctor is interested in the quality of medical care. That his interest is to see to it that people are protected by decent, hard work of an experienced and trained surgeon or doctor. That is difficult to persuade the ordinary layman, but," he said, "That is the only thing in which we are interested, and we give up almost everything else for that." Now, he was only one, expressing the opinion of a hundred and ten thousand doctors in the United States whose sole interest has been and, I think,—if you get nothing out of this case but that, you have learned what the American medical profession has been doing for the past century almost of its existence.

For instance, take the Bureau of Investigation which Dr. West told you about. Did you know that there was any bureau of doctors, for which we don't contribute any money, that are watching the drugs you buy in the drug store to see that they are standard? Did you know they are watching the food you eat to see that it is not polluted? Did you know that when you went to the hospital, or your son, your mother, father, sister or your baby, that that hospital was being investigated by the American Medical Association to see that it was up to standard; to see to it that when you were operated on you would not be infected?

Did you know they were checking the staffs of the hospitals to see that a drunken surgeon, for instance, was not operating on you when you were sound asleep under the anesthetic?

Did you know that the medical schools of the District of Columbia, and of the complete United States, were being so investigated that in the past forty years they have reduced the cheap diploma mills from one hundred fifty; they have cleaned that up until today we have sixty-six medical schools; and Dr. Cabot told you that they were of that high standard of curriculum and training that the young doctor of today, when he graduated from that school and went into training and internship was perhaps better able to take care of the health of the people than the trained doctor of experience of fifty years ago?

Every single bureau that is being administered and maintained at the cost alone of the American Medical Association is being maintained in the public interest, a watchful, careful eye for you and for me, and an eye we never knew was awake; an eye we never knew never slept.

That is the work which the American Medical Association has been doing for the public. And what has it been doing for the profession? It has been publishing what Dr. Cabot said was the finest medical journal in the world to keep every doctor abreast of the times. Every article therein which might be instructive; everything which was new, for the betterment of the profession, all set out there in the weekly magazine; and from that weekly magazine, and from the advertising contained therein come the funds from which you and I, and the prosecution, and all of us, have been protected.

Now, they say "We admit that. We admit they have done a great many fine things; a large amount of good; that the medical profession is not on trial; that neither is G. H. A. on trial here."

We know G. H. A. is not on trial, but I am not too sure of the sincerity of the statement that the American Medical Association and its professional members are not on trial.

If the American Medical Association has done anything it has done it at the behest and instruction of the House of Delegates, just as when the President of the United States signs a bill, he does it after it has been passed by the House of Representatives and the Senate; and, therefore, the representatives of the entire medical profession have at stake their reputation; their bona fides of action; the sincerity of the purposes for which they were incorporated. Every one of those things are at stake when they assault and attack the American Medical Association as a conspirator to restrain Group Health Association in the District of Columbia.

This organization, which is looking over four or five thousand schemes all over the United States—and they say it stopped the machinery of all that nationwide activity just to restrain G. H. A. here in Washington. And how do they say it did it? They have offered in evidence here an article written by Dr. Woodward. We put Dr. Woodward on the stand. He is a man over 70 years of age. He has spent his life in the public service. For forty years he took care of the Public Health Service of the City of Washington. He had rendered that service so well they called him to the City of Boston where he took care of the public health of that great city. And he was called from there by the American Medical Association to head the medical legal department. Why?

Because having taught over forty-five years in the universities. Having taught here in Georgetown Law School for over forty years, he had at the same time studied law, and he holds a degree of LL.M. He is a member of the bar of this court; of the courts of Massachusetts, of Illinois, and he it was who could see the legal significance of medical problems as they presented themselves in state legislatures or in the practice of the profession generally throughout the United States.

The first he heard of G. H. A. was when Dr. Verbrycke wrote him a letter when he came to Washington. Now you will recall that they harp, with a great deal of repetition and strength, on the fact that the Board of Trustees of the American Medical Association authorized an investigation into the facts surrounding G. H. A., and the publication thereof to the profession. Isn't that too bad?

Who is the American Medical Association: part of its duty has been to see to it that any association which crops up to take care of the health of the people should be investigated in the public interest, so that they, in turn, can keep their members abreast of the times; reporting to them fully what a full and complete investigation discloses.

Mark you, they didn't say "write an article at once." They didn't say "write something: we don't care what it is; whether it is true or false." That is what they would have done if they wanted to restrain Group Health. Do you think Dr. Woodward would have been here three months trying to get the facts if it was recklessly determined to restrain Group Health? What did he do? He came down here and went to the source of what should have been information, Mr. Zimmerman. Now, we know Mr. Zimmerman had started this whole organization. We know that he had been with it from the beginning. Why wouldn't Zimmerman tell the facts to Dr. Woodward? Why did Group Health take the position that it would tell the American Medical Association and the District Medical Society nothing? Why did it refuse to give anybody any information?

That is what I cannot understand from the testimony in this case. They may say "Oh, we were afraid you were going to attack us." Why? The American Medical Association sponsors schemes for the prepayment of medical care.

Why, we brought to you as a witness the president of the American Hospital Association and put him on the stand so you might hear him, the man who received this letter concerning which you have heard so much about. This smoking

out letter. We brought him here so that you might know how that letter affected him. Why? We did that for this reason: You can take a letter like that and all you see on the face of it are the words; it can't explain anything to you; and then you can put any interpretation you want on those words; it can't answer back. And then you argue from that letter that it was a threat. "The man who received that knew he was under pressure. The man who received that knew that unless he knuckled down and did what you told him in that letter to do, was going to suffer"; so we brought him down here, and said "Let them cross-examine him as long as they wish. Let the man who received the letter tell you. He can talk; the letter can't."

He told you of the group payment plans that were up there in New York State, there in the locality where his own hospital is; and he told you that there were others on his staff than members of the American Medical Association. That there was never any threat or coercion or pressure exerted against his hospital. Why, now, then, was it—to return to Mr. Zimmerman's refusal to tell Dr. Woodward anything about Group Health?

Woodward told him who he was; that he was from the American Medical Association. Dr. Woodward was asking him about the $40,000 which he had heard had been received. No information. Mr. Zimmerman slips out of the room for a moment; comes back; Dr. Woodward says "Won't you show me the contract under which the $40,000 was paid?" Dr. Woodward told you he said "Brown will be at Atlantic City, at the convention next week; he will have the contract."

Dr. Woodward left Washington with no information and went to Atlantic City. He was there for three or four days. He was registered; his name was on the list. Anybody could have found Dr. Woodward but nobody presented any copy of the contract and Dr. Woodward went back.

Oh, but they say, the resolution under which he acted stated that he and Leland were to return to the City of Washington, and there to advise the District Medical Society. And there is the terrible thing; they were to advise the District Medical Society and, therefore, if they advised the District Medical Society they are in confederation, combination and agreement. But they don't follow it up. They cut off at the important point. You probably didn't quite catch the significance of it, and I don't blame you with all those documents read and reread. It would be humanly impossible for anybody to recognize what some of them were about and remember it, but I took up for you the minutes of July 12 of the District Medical Society. They were abstracted, and what advice did Dr. Woodward give?

They recorded that he talked about bringing quo warranto proceedings because he had been right across the street in the Recorder of Deeds' office and found out that G. H. A. was incorporated to practice medicine, and he, as a lawyer, he who had been at the head of the legal medical department, had known that in various states of the Union the courts had declared a corporation could not practice medicine; and, therefore, he was advising the District Medical Society then, as he did consistently and which is the only advice he ever gave, "Hire a lawyer; employ a lawyer. Follow his advice."

And what did Dr. Leland advise them about trying to in any way restrain G. H. A.? He was talking about a prepayment plan for the distribution of medical care. Now, why do they argue to you, ladies and gentlemen, that this advice necessarily is the point of beginning of this conspiracy when we have in the case the evidence as to what the advice was? I will tell you why. Because the entire case is built on circumstances; circumstances like that. A visit from Dr. Woodward and Dr. Leland to the District Medical Society. They are careful not to produce facts because you and I can understand facts, can't we? But when circumstances come along, and you hear one side argue this circumstance, and another side that circumstance, it gets your mind in confusion. You want to do the right thing. You are trying hard to find out the truth of the matter. You have one fellow appealing to you with one set of circumstances and another with others; and you want to know what the facts are, and they haven't produced them and, therefore, if they leave circumstances in this confused mass before your minds then they feel as though they can argue to you that out of these circumstances came a conspiracy when, as a matter of fact, none, not only came but was never conceived.

Yes, they came down to advise. And there is an old adage in the law: that one charged with an offense is presumed to be innocent.

There is another principle: that conduct is presumed to be fair and honest.

Now, why is that? Because most men are decent. You will find some crooks, yes. Our Lord found one among the twelve, but by and large people are fair and honest in their dealings with their fellow men; and so the law says we have to take into consideration what we know to be the general rule and not fasten on somebody's conduct a suspicious motive.

If that were not true none of us would have much reputation because there isn't anything we can do that is not considered one or two ways by people who have the construction of our conduct under their investigation for either discussion or determination. Therefore, when we find that Dr. Woodward came down here, he came down here as he said on that witness stand. He was trying to find out facts.

Was the article a reckless one? He sat there on the witness stand with the original article he wrote, and on the margin of that were his sources of information; and I asked him "When you made that statement in this article, where did you get it?" And he turned to page so and so of the Congressional Record. And I asked him again "When you made that statement, upon what did you base that; what was the source of your information?" And he said from such and such a case in the Supreme Court, or State Court—and they dared not cross-examine him.

The article was a carefully written article by a man who had spent his life in his professions. He had spent practically the summer in trying to get material and finally all he could get was the certificates of incorporation which was there and is a public record across the street, which you and I may have a copy of upon payment of the price of the certification —and a copy of the by-laws.

But why should the American Medical Association be interested in writing an article for the entire membership throughout the United States on a clinic in the City of Washington? The answer, gentlemen, is given to you by Dr. Woodward. He said he was not interested in G. H. A. when he read the letter of Major General Ireland of March 27, 1937. You will remember that letter went to Dr. Cutter and he sent a copy to Dr. Woodward, and also to Dr. Leland, Dr. Leland because it concerned his department as a new method of the economic distribution of medical care; and Dr. Woodward because he said he knew Dr. Woodward was born and raised in Washington. He said he was not interested when he read that letter because it referred only to the District of Columbia, but when he came here and inspected G. H. A.'s certificate of incorporation and learned that it had qualified to deal not only in the District of Columbia but throughout the United States, wherever there were employees of the Government of the United States, then, when he knew that it was to operate wherever in the United States it could find those employees, it ceased to be a local clinic and became a national issue, for which all of the doctors of the American Medical Association had the right to be informed. Hence he wrote the article.

Well, hadn't newspapers been writing articles about G. H. A.? The testimony is full of references to publicity. Now, it was perfectly all right for a newspaper to write it, but if Dr. Woodward wrote an article on the medical profession to the members of the profession throughout the United States then he is pronounced an arch conspirator. The Court will tell you what the law on that matter is, and the Court will tell you that Dr. Woodward had the right to publish the article and that anybody in the United States still has the right to use legitimate persuasion and argument, just as I am trying to argue to you now—and I would have the right to make the same kind of an argument out there in the park now on a soap box if I wanted to, just as long as I don't conspire, confederate, or agree with other people for an unlawful purpose and to violate the law. Because that is of the right of which I spoke to you yesterday; the right of free speech and the right of freedom of the press.

Now, there isn't a single thing that the American Medical Association did in that case other than authorize the preparation of and the publication to the members of the American Medical Association throughout the United States of this article. And this article, as I have told you, and on the danger of repetition I am going to say again, was carefully prepared by an honest, decent man, who had spent his life in the honorable practice of his professions for longer years than perhaps you will find any other witness has ever spent in the practice of their profession, testifying in any case.

Oh, but they say "November 6." The American medical profession was then again appealed to. You remember that in this discussion of November 3, in the District Medical Society, the members said "The American Medical Association hasn't done anything for us. Let's send a committee out there and see if they won't do something." They didn't know what to do,

so they sent out Dr. McGovern and Dr. Hooe, and you remember there they sat down with Dr. West and Dr. Leland and Dr. Woodward. There, the five of them were together.

Well, hasn't a doctor who is a member of a committee of a local society the right to go to the national association to talk over with the officials of the national association his or their problems; discuss with such officials who are in contact with the entire country and who are at least supposed to have a larger, and wider knowledge, and wider experience with such things? So they went out there; and what was the result of that conference?

Do you remember I took the minutes of that conference while I think Dr. Woodward was on the stand, and I said "Find me a suggestion made in that conference for action by the District Medical Society other than Dr. Woodward's statement 'Go back and employ a lawyer.'" You can't find it.

That is all that the American Medical Association did to those two men when they came out there. They said "It is your local problem. We have done everything we could do. We investigated the facts as best we could. We publish what we found; and that is the end of everything here that we can do. Go back and employ counsel and follow his advice."

That is everything the American Medical Association has done. And that organization, which has spent around a century in the service of the medical profession and the public generally, which is composed of the finest type of men in the United States, is now condemned as a conspirator, and they want you to hold them as violators of the law by your verdict, saying that they are guilty of conspiracy. And they didn't raise one finger against G. H. A.

Have you heard where they did a single thing other than publish the article which they had a right to do? It was not only their right; it was their duty to acquaint the medical profession, and the public, with everything it told them.

But they say "Dr. West wrote some letters." He did. Again, those letters in the minutes of the District Medical Society are the only evidence in the case. It was all documentary evidence. We had Dr. West go on the witness stand and say "Yes. That is another letter asking for information." And he said again and again in those letters "I can't understand how an agency of the United States would be set up as a corporation to practice medicine when the courts of most of the states before whom that question has come have pronounced such an organization illegal." Again he said, "I know that the district attorney of the District of Columbia and the Corporation Counsel of the District of Columbia have pronounced them illegal." And "We have done everything we could to oppose Group Health."

Now they say "Ah": they say "Now we have Dr. West. He is the general manager of the American Medical Association. Now, we have him admitting on paper 'We have done everything we could to oppose G. H. A.'"

Yes, they have. They said the same thing to the committee of the District Medical Society on November 6. What could they do? As Dr. West said "I tried every way I could to find out facts about this organization." He had even gone to United States Senators. Now, you would think a Senator at least could pry loose a little information. He ran right up against a stone wall. Dr. Copeland sought information. They wouldn't even give the Representatives of our National Government the information. He said "I tried to get the information, and we published the information which we had and that is all that we could do," and that is all they did.

Now, remember, these men had a right to talk just as any of you being members of any society or organization have a right to speak therein. I have a right in my society to discuss the questions which are of interest to the members and the society, and so have you; they had a similar right. You would be poor members if you didn't take enough interest in your organization to discuss its problems. And suppose some one was checking you every word you said, and three years later you were confronted with an abstract, not of what you said, but of what others thought you said? And when you have an astute gentleman for the prosecution pulling a letter on you that you wrote three or four years ago, and he is trying to distort everything in there to meet the view which he has, and is examining you along that view—try it some time. And then you stood up there with a jury looking at you, a courtroom full of people looking at you, counsel all looking at you and asking you questions, and a copy of a letter is produced and you say "No, I didn't write that letter. I didn't mean that in the way you say it." And then the next thing you hear "Did you expect him to admit it? Of course, he would deny it; he is afraid to tell the truth." Try it some day. Try it when you know in your heart that you didn't mean what somebody else has said you meant when you wrote the letter. And try to stand up against the questioning under such circumstances. "Let me hear you explain this." And it is three or four years old. That is the way of this case. We even had Dr. Parnell, I think that is his name; it is close enough to it—we even had him look through his file to see if he could possibly locate that correspondence on "smoke out," and fortunately he found it, and he brought down to you three letters and we passed those letters around, and on the three letters there were three different signatures of Dr. Cutter. One secretary had written a letter; another secretary another letter. His name was on it, and he did sign the letter, the smoke out; he didn't sign the other letters. And he told you that he hadn't dictated the smoke-out letter, but these letters come on his desk from three or four stenographers, twenty-five to fifty a day, and he signed them: perhaps some of you have to do the same thing. You say to the stenographer "Have you written up this letter," and upon that assurance it is signed. And those letters were brought down just to show you that what Dr. Cutter told you was the fact, because there was the argument to be made that, of course, he denied that letter because he was afraid of it. Afraid of what? Why should he be afraid of the letter? Here was the man who received it right here on the witness stand, but it is the same argument that I told you would be directed against any witness who had written letters or signed forty-five or fifty of them a day, necessarily having to parcel out to those working in the office this work, because no single man could do it.

Now, that is the connection of the American Medical Association with this case. There is a statement having been made there that Dr. West wrote to Dr. Hanley; wrote to a young man up in Long Island, I think, on Oct. 12, 1938. May I have that exhibit? It is not a very good photostat, as you can see; and they say that Dr. Fred Hanley of the Long Island Hospital had written down here and that Dr. West reported the situation here regarding G. H. A., and that he did it with the intention and for the purpose of restraining G. H. A. See the length to which they have gone to try to persuade you. It is a little bit sometimes more than I can understand. In order to persuade you that the American Medical Association was trying to keep Dr. Hanley from becoming a member of the staff of G. H. A. they say Dr. West wrote that letter. Well, what does he do? He states the absolute facts: "It is my understanding that the ruling of the United States Attorney and of the Corporation Counsel were made the subject of an application to United States District Court, that is the trial court, not the Appellate Court—and one of the Judges of that court held that Group Health was not violating any law."

And in the argument yesterday you heard it said to you that he knew when he wrote that letter that Judge Bailey had just decided the case.

Why did he say that? Did he give any advice to Dr. Hanley? Now, let me show you the difference between fact and suspicion. If Dr. West wanted to persuade Dr. Hanley not to become a member of the staff of Group Health, wouldn't he have said something there? Wouldn't he have said "Don't join that Group Health outfit. It is a bad group and I don't think as a young man you should possibly join this group."

Does he make any statement like that? He tells cold facts in response to an inquiry. The young man can do as he pleases. He gives no other advice or makes any other suggestion. Now, if he was a conspirator with all the influence Dr. West has as general manager of the American Medical Association he would have said to Dr. Hanley "Don't have anything to do with Group Health," but all he does is supply him with the facts, and we have just as much right to assume that it was a letter of inquiry, although the letter is not here, similar to that all the doctors in the United States write to the American Medical Association to be advised about medical affairs; just as every one of the inquiries written to Laux and Simons and Leland—and they have combed thousands upon thousands of letters, a few of which mentioned the Ross-Loos Clinic or some other clinic, in which was a statement that organizations of this kind usually are unethical or deemed unethical by the American Medical Association. And do you remember when Dr. Leland was on the stand and I took one of those letters and I said, "Doctor, what were you referring to when you said this?" I wanted this jury to know the fact. I didn't want you ladies and gentlemen to be sitting here trying to guess. I didn't want your minds when you went to the jury room in there to determine the truth about this matter, to have them pulling this way and that way; wondering what the fact was. I didn't want it left to your imagination just what Dr. Leland meant when he wrote that, and when Laux and Simons wrote similarly; and I said "What were you referring to in that letter?" He said, "I was referring to practically one hundred fifty organizations

in the State of California that had been closed." By whom? The American Medical Association? Oh, no. By the State of California.

Ladies and gentlemen, these men are in the office every day watching these things all over the United States. They are the ones whose business it is to know about them. They have a Bureau of Investigation. They are not running it for personal gain. They are operating it so that you and I and all the citizens of this country, all over the United States, may be protected.

Did you know that a hundred and fifty institutions in California had been closed up by the state? Did you know from that letter he had that in mind when he was writing it? No. They leave it for you to guess, so that you wouldn't know what the facts were.

What did Dr. Leland do throughout all this case? Let's take him. We have Dr. West. Dr. West didn't do anything but answer correspondence, as he had a right to do. If a man writes to you you have a right to make an honest, straightforward reply. Your opinion might differ from his or some one else's opinion, but that is what made this country; the right to do that thing; and out of the clash of beliefs and opinions, so that we may come to a form of government and enactment of laws which have been more in the public interest than in any civilization known in the history of the world. Dr. West wrote letters. He had a right to, and unless, of course, he was in some conspiracy to write the letter, if when he wrote all these letters—and they stretch back to 1935 and 1936—letters in which he expressed what he pleased with reference to certain clinics about which inquiries had been made, and also with reference to what the man was inquiring about G. H. A. being illegal. Dr. Woodward wrote the letter. Dr. Woodward was in Washington twice at meetings of the District Medical Society and, gentlemen, I don't know how it is that men can find in their minds the amount of suspicion with which to place on the honest acts of other men that has been found in this case with reference to these men from the American Medical Association. You knew when you saw Dr. Woodward on that witness stand he had no criminality in his heart, mind or soul. You know a man who is now approaching the last time before the sun sets that he will not do such things; you know that at that period of life he is not suddenly transformed into one who will conspire to crush down and destroy G. H. A., or any other decent thing. You knew that before he ever opened his mouth in response to his oath as a witness. He came down here, he tells us, to attend the meetings of the District Medical Society and, as a man of judgment, experience and training, he always left the same words. It was repeated so often it was like a litany. They asked him the question "What shall we do?" They didn't know. His answer invariably was "Hire an attorney and follow his advice." And now he is dragged through this courtroom as a conspirator, because he gave the same advice to the society that one of you ladies or gentlemen would give to a good personal friend of yours in some difficulty or trouble. You would say "Go down and see a lawyer; follow his advice." And because you did that you wouldn't want to be dragged in here and indicted if later on some question arose with reference to that advice which you had given.

What did Leland do? He came here and advised the District Medical Society with reference to a prepayment plan. That is his business. That is what he is there for. He is head of the Economic Bureau. He makes an examination of these various plans throughout the United States. He gives advice. Did he come east and say "Let's find some way of wrecking G. H. A.?" Did he come here and leave advice as to how to restrain them or kill them off? He came down here on that single occasion and the minutes show he advised them with reference to a prepayment plan. And then he wrote some letters just as Dr. West had written with reference to information inquired about, concerning certain clinics throughout the United States; and you have heard this Ross-Loos Clinic so many times that let's get rid of it now. Dr. West on that witness stand showed a letter in which he said—and we are criticized now for the action of the American Medical Association against Ross-Loos. Get this, please. This is important. This shows you how far they have gone in order to build up this case against these people. I told you, and it has been testified to beyond doubt, that with reference to purely local affairs, and the administration of the local society, the county society was a unit self-sufficient to itself, just as Montgomery County is in the State of Maryland; just as Arlington County is in the State of Virginia.

Do you find the Governor of Maryland: Do you find the Governor of Maryland going to the local officials at Rockville and telling them what they may or may not do? Do you find the Governor of Virginia going to Arlington County people and deciding for them what they shall do; whether they want to put in a sewer, or street, or what not? Doesn't the county go ahead and do it?

Somewhere out in California the county society had a clash with the Ross-Loos Clinic. Now, under the constitution of the American Medical Society if a man is accused of unethical conduct he first has the trial in his county society. They had a trial in the county. Then, in the further protection of his interests, if he is dissatisfied with the result of that trial he has the right to appeal that up to the constituent state society, and if that goes against him then he has a right to proceed up to the American Medical Association, to what they call the Judicial Council. The Judicial Council has nothing whatsoever to do with the facts of the case. It looks the record over and sees if a man had a fair trial in accordance with the constitution and by-laws.

Now, remember, the American Medical Association is charged with having done everything it could to frustrate, restrain and destroy the Ross-Loos; it was told you so yesterday. The Ross-Loos Clinic is held up before you as a prepayment clinic which was the guide, and model of G. H. A., and you are told that the American Medical Association sought to destroy it and, following the same course of conduct, sought to destroy G. H. A. Now, let's get the facts. Now once and forever straight. If the American Medical Association wanted to destroy Ross-Loos, it could have done it. All it had to do was affirm that decision, wasn't it? What did it do? Sent it back; reversed it; shot it back from whence it came, and on what? On a pure matter of procedure. Now, if the American Medical Association is such a crooked institution; if it is so determined to destroy things that it will crush under camouflage to the nth degree, would the Judicial Council of the American Medical Association not have said "We consider these people have had a fair trial, and the decision is affirmed."

They shot it back, and Dr. Ross is a member of the American Medical Association; Dr. Loos is a member of the American Medical Association. Not one word has ever been uttered against Ross-Loos by the American Medical Association.

Dr. West, in his letter, stated "I understand Ross-Loos is giving a good sort of medical care."

Dr. Leland, in his letter, said the same thing and yet they would have you think that the American Medical Association was pursuing the same course of conduct with reference to G. H. A. that it did with reference to Ross-Loos.

Now, let us take the other one and get rid of that. You will remember that when Dr. Cutter was on the stand they talked a great deal about Mount Sinai in Milwaukee: Do you remember that?

There was a case in which the Milwaukee local county society—in Milwaukee County, I think—and the state society of the State of Wisconsin had affirmed a finding that doctors engaged in a clinic there were guilty of violating the rules and regulations of that county society. Now, we don't know what that organization was. We don't know what the doctors did. We have nothing before us except the opinion of the Judicial Council in which it said that these five men have been given a fair trial before the county society and that the said county society had been affirmed and with reference to them the American Medical Association had nothing to do. It had nothing to do with reference to the expulsion of members from any county society. That initiates in the county and goes on through the state and finally to the Judicial Council. The Judicial Council composed of seven prominent doctors from various sections of the United States sat on that case. They came to the conclusion in that case that these five doctors had a fair trial, and there wasn't anything they could do except affirm the decision.

Now, there were various hospitals in Milwaukee that had these five men, or some of them—I don't know how many—on their staffs. They have accused Dr. Cutter of using the Mundt resolution in order to get rid of the five doctors on the staff of Mt. Sinai, and nothing is more contrary to the facts or truth than that. The Mundt resolution never came into the case, and they know it; and they have no right to argue to you that Dr. Cutter used the Mundt resolution. Those doctors were tried by their brothers in Milwaukee. I don't know anything about Milwaukee, but we do know that the doctors of Milwaukee didn't think those five men were conducting themselves properly, and the state society on appeal didn't think so either; and here were hospitals which had on their staffs five men whom their brothers wouldn't associate with in the practice in which they were then indulging. You remember that the American Medical Association doesn't ask the hospitals to be approved. The American Medical Association doesn't force a hospital to be approved and Dr. Cutter said

"If you don't want to remain on the list of approved hospitals you don't have to remain. We can't do anything about it, but if you want to remain we are not going to publish to the people of the United States that we approve a hospital which has on its staff five men whom their brothers don't think should be there; in the community in which they live."

That is what Dr. Cutter said.

The hospital could have retained those men on its staff if it desired to. There wasn't a single thing the American Medical Association could do about it. Oh, but they say, the approval of the hospitals by the American Medical Association is a thing of great value. Right. If we hadn't been operating as an outstanding organization, with purity of purpose, and sincerity of ideals, then we never could have won the enviable position where hospitals would be running to us saying please approve us. The reason why the hospitals want the American Medical Association to say "We are all right" is because the hospitals know that well informed opinion of the United States shows that the American Medical Association does not put its stamp of approval on any hospital which has the slightest suspicion lodged against it either with respect to the service it renders; the plant it maintains, or the staff which operates therein. That is why. And we have no apologies to make, because Dr. Cutter said to Mt. Sinai Hospital "If you want to keep five men whom all the brother physicians of the city say should not remain on the staff, you may keep them; but I cannot say in honor to the people of the United States 'We approve your conduct in so doing.'" The Mundt resolution therefore had nothing whatever to do with it; and while we are on the Mundt resolution, let's clean that up too.

THE COURT:—Mr. Leahy, would you like a few minutes?

Mr. Leahy:—Yes, your Honor.

(At 11:15 a. m. a brief informal recess was taken, at the conclusion of which the following occurred:)

Mr. Leahy:—If your Honor please, and ladies and gentlemen of the jury, I had just gotten down to disposing of the Mundt Resolution, so called. You remember that comes into the case in this way, in an attempt to show you that the American Medical Association was in a conspiracy to restrain G. H. A., and they accuse Dr. Cutter of having made an inspection of the hospitals in the District of Columbia, which had not been inspected for years, and then in the report of the inspection to the hospitals the inspector attached the Mundt Resolution.

The Mundt Resolution, in substance, was a resolution which was passed in 1934 in the House of Delegates of the American Medical Association; and that resolution provided that they should refer to the appropriate committee the question as to whether or not doctors on the staffs of hospitals approved for intern training should be members of their local societies.

Now, get the distinction between the ordinary hospital and a hospital for intern or resident training. Not all hospitals are hospitals for interns and resident training. Some are for resident training; others are for intern training alone, and some are for both.

A young doctor, after he has graduated from medical school, usually takes an internship. Some of the states, as the testimony shows, require that as a prerequisite to the license to practice. Most of the states require it professionally, because they believe that the young chap who has just come out from the theory of medicine ought to take at least one year of the practice of medicine under the supervision and direction of old practitioners who are on the staffs of hospitals.

I think that in evidence here are the staffs of practically all of the hospitals of the District of Columbia; and they are composed of the finest surgeons and doctors that we have. It is a bit of an honor and distinction for a doctor to be on a staff, that is, the regular staff, because that is the sustaining staff of the hospital. The hospital has a responsibility to those who come to it for treatment. If, for example, any one of us desires to go to a given hospital we like to know that if one of the members of that staff attends us medically or operates on us surgically we are going to get the best medical attention we can get in the District of Columbia. We want to know that we are going to get experienced professional care.

Therefore, any hospital which holds itself out as one which can teach young medical students just out of the medical schools ought to be a hospital which has those on its staff who are capable, able, willing, and have the time and disposition so to treat them.

And just as the American Medical Association has been careful to inspect medical schools to see that they turn out young doctors who are well trained, so they have followed that up by seeing that hospitals which want to teach those young men shall, in turn, have staffs of the quality and character I have just described.

Beyond that, there are hospitals for resident training. The only difference between the young intern and the resident is this: the young intern receives his training generally. The resident is a young man who wants to specialize. Maybe he wants to specialize in obstetrics or in surgery or in some particular branch of surgery. So he will continue his internship further and he will take a residency and then he will receive particular instruction, particular instruction, in the branch of medicine or surgery which he desires to pursue. And the American Medical Association has been careful to see to it that those hospitals which are going to teach specialists shall be equipped to see to it that they are able so to do.

Is there anything wrong about that? Sister Rosa said she believed it was a good thing. Is it not a good thing for you and for me and for all of us that there is some supervising power to pull up the reins of the hospitals if they should begin to get careless? Is it not a good thing that there is some one in authority who can say to the hospitals in an authoritative way, in the sense that they have the ability, learning, experience, and training, "We are not going to approve you for instructing young doctors, because you didn't do this or you didn't do that or you didn't do the other thing; and unless and until you do, you are not going to get the approval which you are seeking"?

Remember, again, the American Medical Association does not ask any hospital to be approved, not any more than the American College of Surgeons. The American College of Surgeons goes right into the operating rooms to see to it that they are kept clean of infection, that the equipment is proper. The American Medical Association takes the hospital as a whole and sees to it that the proper instruction is there for those who seek it.

In 1934 a doctor named Mundt, in order to guarantee for the public good and for the patient that those doctors who did that kind of instruction should at least have the stamp of approval of the doctors in their neighborhood, said it would be a good thing if the hospitals should have on their staffs as the men teaching these younger doctors, members of the local medical society.

What was the purpose and intent of that resolution? It could not have been to restrain G. H. A., could it? It was passed in 1934 when the House of Delegates did not know one thing about G. H. A. They were not talking about clinics. They were not talking about producer and consumer groups. They were not grouping anybody. They were thinking of the patient and the general public health and welfare. And in the report which came out of the committee, the proper reference committee to which it had been referred, they said that the selection of staffs of hospitals was of great importance, and they said, "We have no control over hospitals; we cannot enforce such a resolution, but we can recommend it."

Then there was so much talk about this Mundt Resolution and it was twisted and distorted from the purpose for which it was adopted, in order to make it a dagger thrust at the heart of G. H. A., that we had Dr. Hayden come down. He is a former president of the American Medical Association. Dr. Cutter is secretary. He is on the Council of what they call Medical Education and Hospitals. Dr. Cutter's principal work is to look after medical schools and see that they are brought up to a standard. Dr. Hayden was brought down here for you, so that you would have an authoritative statement of that Council of just what was meant by the Mundt Resolution. He told you that it was an ideal for which they were seeking, hoping that they might attain it some day; that it was an ideal, but that it would be stupid—and that is the adjective he used—it would be stupid to say that they were using it as a threat for all hospitals to comply with.

Do you remember the testimony of Dr. Mitchell? Do you remember that he said that in 1936 the Emergency Hospital had been having so much serious trouble that they finally enacted a rule which required that the members of the staffs of hospitals should be members of their local societies—not of the District of Columbia, but of their own local societies? Why? Because, as he told you, he felt that when a man was a member of his local society he had passed the investigation required by the membership of that society and that there was a bit of a stamp of approval on that man which at least made him prima facie available and qualified as a member of the staff.

You men belong to organizations. You do not take in every Tom, Dick and Harry, do you? If somebody is proposed for membership, don't you look him over? Don't you say, first of all, "Well, I don't know. Do we want this chap in here, or don't we? What kind of a man is he?"

The local societies put the doctors through the same test, and if they are doctors who are not living up to standards—I don't care whether you call them ethical or moral—then they will not be admitted to membership in the local society.

Now, let us examine this argument as to whether or not the Mundt Resolution was used by the American Medical Association, through Dr. Cutter or by Dr. Cutter, personally, in order to restrain G. H. A. Once again it is a little bit difficult to discuss this evidence with you under the charge that is made against that man. Up until we had to produce before you the facts, I knew that you were suspicious. I knew that you just wondered "How come? How come that these hospitals were inspected at this time in 1937?" Remember, G. H. A. never opened its doors until November 1. G. H. A. was not in existence as a going institution until November 1. If we had not brought on for you the facts your minds would still be in a state of confusion as to just why those hospitals were inspected.

We brought on for you the inspector who came at that time to inspect these hospitals.

They tried to put into the mind of Dr. Cutter the germ of conspiracy because Major General Ireland, without any suggestion from Cutter at all, wrote Dr. Cutter a letter in March, before anybody had heard of G. H. A. in this wide, wide world, so far as any one of these conspirators, as alleged, was concerned. And Dr. Cutter told you that he made a copy of it for Dr. Woodward, because Dr. Woodward was born and raised in Washington; and he made a copy of it for Dr. Leland because Dr. Leland's department looked over the medical economic matters. Ireland's letter never mentioned G. H. A. It said an H. O. L. C. group.

Following that letter in March there was not any communication to Cutter about it. He put it away in his files and forgot about its existence. He certainly never thought that it would be used for the purpose that they are using it against him now. And Dr. Cutter took that stand on his oath—a man who has been at the head of the Graduate College of Physicians and Surgeons of New York, who has been at the head of the Medical School of Southern California, a man who has for years been trying to take care of the standards of medical schools and colleges—and he said, "I never heard of G. H. A. until October 1937."

Then we went one step further and showed you why the inspection was made. This is just a bit like a pebble in a shoe: it is irritating to think that people would have the temerity to charge these honorable men with being conspirators in the face of the truth which they can show.

Dr. James Cahill, who is the chief of staff of Providence and of Georgetown University hospitals, was trying to get Georgetown and Providence approved for a residency in surgery. Those two hospitals you and I have often thought of as being two as good hospitals as we can boast of in the District of Columbia. I doubt that it would have ever occurred to your mind that when Dr. Cahill asked for the approval of a residency in surgery anybody would have to examine those hospitals. You and I would have said, "Of course those hospitals are two of the finest we have. They have been here before we were born. We unhesitatingly send our friends or our relatives there when they are sick."

But did the American Medical Association take that view? They said, "If you want the approval, fill out the proper form and let us see what you can do in the matter of instruction of these young surgeons that you want the privilege of instructing."

So Dr. Cahill in due course filled out an application, and then, as Dr. Peterson told you, when he could find time to come to the District of Columbia he came to make his inspection. I think it was some time in May. Maybe it was in June. He told you, "I never had heard of G. H. A."

These people think that G. H. A. was the only organization in the wide, wide world to which the entire world paid any attention. Peterson never heard of it. You and I never heard as much about it as we have heard about it in the court room in the last two months.

Dr. Peterson came here to inspect and to determine whether or not a residency should be granted. You remember I read the report of Peterson to you, so much of it as contained his criticisms; and if he did not go through Georgetown and Providence with a fine-tooth comb I am very much mistaken. Why? Was he doing it for any other purpose than to protect those who one day would be operated on by the young resident whom they wanted the privilege of teaching? That is the only purpose he had in mind. He was not thinking about restraining G. H. A. He came here and told Providence Hospital, "Listen. Unless you check up on what you have been doing you will not only not get approval for residency, but the chances are that your right even to teach an intern will be disapproved."

And he told Georgetown the same thing; that they should correct certain deficiencies which were found, in order to make them qualified for the instruction of a young resident.

Three of the hospitals had not been reexamined for a number of years, and while he was in Washington he said, "I will take care of those hospitals while I am here." There are over six thousand hospitals in the United States. They have two or three inspectors, and it is a job, is it not, to inspect six thousand hospitals?

He inspected those hospitals and made a full account of conditions as he found them. One of them is a special hospital—Columbia. That has to do only with residencies for obstetrics. The others he inspected and wherever he found anything wrong he criticized them.

Don't you think it is a good thing, while you and I are asleep, that we have somebody watching over the hospitals and giving reports such as Dr. Peterson gave here? Don't you feel a little safer now to think that there is some one who is pulling up the hospitals of the District of Columbia by the reins and making them hold their heads up higher, or else they won't get the approval of the American Medical Association?

And then on the bottom he wrote: "What possibility is there for your hospital to adopt the principles"—I cannot recall the exact words—"laid down in the Mundt Resolution?" That resolution was passed only and solely for the good of the patient and the public, in order to raise the standards of the hospitals and keep them high. Oh, they say, "Cutter got five hospitals. Warfield got some more on Dec. 1, 1937." Did he? Remember, they charge that the American Medical Association threatened and coerced the hospitals of the District of Columbia when they attached that Mundt Resolution. They received a letter back from Providence in which Providence said it would be a tragedy—I think that is what the Sister wrote—if Providence lost its approval for intern training. Of course it would. The well informed public opinion would know that Providence had deteriorated to the point where it was no longer considered worthy of teaching young men; and the same thing would be true as to the residency. Sister Rosa wrote that everything that was offered by way of criticism would be eradicated just as soon as it could be; and it was. But not until they inspected it again. It took Providence Hospital two years to get residency approval.

Is that a restraint of G. H. A.? If they charged us with restraining Providence Hospital from getting approval, that would be looking like it, would it not? But they checked and double-checked, and we had Sister Rosa come here and she said she did not consider it any threat; she considered it was for the good of the hospital.

And Dr. Caylor came to the stand, who wrote this letter, and he used in it the word "requirement."

"Ah," they said, "now we have proved a conspiracy, because the American Medical Association, in attaching the Mundt Resolution, used it as a requirement."

The American Medical Association had a right to do so if it wanted to. The court will tell you so.

The American Medical Association does not force any hospital on an approved basis. You saw here the mechanics by which a hospital got on the approved list. They ask for it. If I ask any one of you to approve my conduct, will not that one say to me, "Wait a minute. If you want me to approve what you do, you do it this way or that way, because that is the standard I think you should pursue."

The same is said with reference to the American Medical Association in its approval of hospitals; and you will note again in the Caylor letter that once again, in the same way in which they drive the dagger of suspicion into your minds, where they emphasize the word "requirement," they never brought to your attention the word "request"—because in the letter which Caylor wrote he said, "The requirement is the Mundt Resolution, and the board has requested that you will comply with it."

Was there any threat from the board, any coercion on any one? Even if it were a requirement, which it was not, any man on the board could either remain on the board or not, as he saw fit. That was his business. The District of Columbia Medical Society did not interfere. Neither did the American Medical Association. But each one of them said they would gladly become a member of the local medical society.

When Dr. Cahill was on the stand I asked him whether or not the American Medical Association had ever followed up further to find out whether all members of the staff actually were members of the local medical society. He said, no. These people who are now conspirators, this great organization, and Dr. Cutter as secretary of that council was so much of a conspirator that when the Sister wrote to him and said that they had all promised to join, he never tried to find out whether they did or not; and as a matter of fact, Dr. Cahill told you that there were men on the staff of Providence Hospital, even at this time, who are not members of the local medical society.

With reference to Georgetown Hospital, Dr. Cahill thought the Mundt Resolution was a good thing, just as Dr. James Mitchell in 1936 thought it was a good thing, even before Mr. Zimmerman dreamed of G. H. A. Emergency Hospital had put it into effect. I said, "Doctor, as a matter of fact, are all members of Georgetown staff members of the local society?" He said, "Oh, no." But, nevertheless, in October 1937, a month before G. H. A. opened its clinic, Georgetown adopted the principle of the Mundt Resolution, but it said, "Those of you who do not belong, take a year to join." Why? Because there are some young men on the visiting staff or the courtesy staff who perhaps, just starting in the profession, cannot afford to pay dues; they cannot afford to buy THE JOURNAL. To these young fellows maybe $25 or $30 is a lot of money, and they cannot afford it. Georgetown, under no circumstances, would keep those young men away from the staff because, for good and sufficient reasons, they could not join.

Columbia wrote and said, "We have a man on our staff who has been on there for years, and we won't throw him off." The person who wrote that letter thought it was a demand, and he said, "We will not throw that man off. He has been on our staff and there are reasons why he does not belong to the local medical society; they are good and satisfactory to himself, they are personal, and we will not go behind them."

Just one other thing on that point. You remember that in the spring of 1938 the Medical Board recommended to the board of trustees of Columbia Hospital in this city that they should have a requirement that all members of the staff of Columbia should be members of the local medical society. What did the board of trustees do? They sent it back, saying "We refuse to enact any such legislation."

The next one was George Washington, and we had Dr. Charles Stanley White come here and tell you about that. I said, "Dr. White, are all members of the staff of George Washington University Hospital local medical society members?" He said "We have thirty-three who are not," as I recall it.

Yet they represent to you now that Dr. Cutter forced these hospitals to adopt the Mundt Resolution—at a time when he never had heard of G. H. A.

I think the other hospital was out in Takoma Park. We have not heard much about it; but the same recommendation went to that hospital as went to all the other hospitals, the five that were examined. The same criticisms were made—not in the sense that all the criticisms were identical, but I mean that in each case the purpose of the report was to acquaint the hospital with the defects in the administration of service which existed in the hospital; and you remember that the A. M. A. was fair enough about it so that they submitted a report to the hospital, so that the hospital could come back with its comment or criticisms.

And yet that is picked out as an instance to show that Dr. Cutter was not performing his duty; he was not engaged in the conduct of his office as secretary of that council; he was not doing in Washington what he was doing all over the United States—inspecting hospitals—but that he had the mean, low, immoral purpose of trying to destroy G. H. A., which he never had heard of.

Is not that stretching the case pretty far? Is not that trying to confuse your minds? Why, ladies and gentlemen, if there had been a conspiracy in this case it would not have taken two months to listen to somebody try to prove it. You would not have had to be listening to arguments about inferences. The facts would have been there. They take the suspicious circumstance that Dr. James Cahill, in the Year of our Lord 1937, happened to think that Georgetown and Providence should be approved for a residency in surgery, and from that simultaneous or contemporaneous event they said, "We are going to argue to this jury that they seized on that request in order to bring about a conspiracy to destroy G. H. A."—which had not yet opened up its clinic, and when the examinations were made it had not even had a staff.

Would that convince any reasonable man beyond a reasonable doubt that men who have lived all their lives in honor and decency have suddenly lost all sense of honor and decency and are now going to join in the commission of a crime against the laws of the United States? What manner of men and women do they think the jury is composed of? Do they think that you ladies and gentlemen have lost your sense and reason too, so that you cannot see through this attempt to pervert and distort the ordinary happenings which occur simultaneously and contemporaneously every day, into evidence of a conspiracy?

They said, "We went one step further and all these hospitals got together"; all these hospitals, through their boards of honorable, decent men, who act as the administrative board of trustees. What did they get out of it, ladies and gentlemen? Maybe some of you have to act in some organizations where you do not receive a farthing in return. You do it because you feel as though you have your place in life, after all; that you are not here just to see whether you can make 5 cents or a dollar every day; that, after all, when it comes to the time when you are leaving this life you would like to feel in your heart, "Well, I have left the world a little bit better in the niche where I was born for my having occupied that niche." And so you go out at night when you are tired and attend a meeting, or you take a membership on a board of this organization or that one. You do not look for compensation in pay. You are only acting because within the heart and breast of every man, every good man or woman, there is that urge to do something for his or her fellow men and women, and you can do it only in the little way in which you are capable and in the place you occupy.

These men did that in these administrative boards. They are composed of our finest citizens. And you are told that those citizens, through their administrative boards, were either coerced or forced or influenced unduly so that they brought all of the hospitals in the District of Columbia into this gigantic conspiracy with all of the doctors in the United States who are members of the A. M. A., and our local doctors through the District Medical Society, to freeze out—whom? Raymond E. Selders.

I do not think counsel would have either the hardihood or the temerity to try to use that particular application as an instrument of assault to strike down the fair reputation of the hospitals of the District of Columbia. I did not think that he would accuse us of so much wrong that he would not leave us even the fragment of a decent motive in considering that application.

Once again we had to go out and get the facts. They were all available; every one of those letters we drew from files which the prosecution had or which were available. Every single letter that we brought in here before you we took from files which lay on the table; and yet they held them back hoping to poison your minds so against the doctors of the District of Columbia and against the hospitals that when I came to speak to you you would be living under such an outrage that you would not even listen to the reason of the facts.

What do you find? Dr. Selders. I am sorry I have to say this. The man is not here. He should have been here. The Government should have brought him here. The Government should have produced him, as it went clear down to Houston, Texas, to bring a man and place him on the witness stand just to identify a signature. And yet they would not bring to you the man who was the principal of the conspiracy that they say we used against him, just as they would not produce Childress, for you to find out whether Dr. Brown was telling the truth as to whether Dr. Neill was offered the Medical Directorship of this organization. They would not bring before you Dr. Selders so that he could answer and stand up and say, "Yes; I got down on my knees to these hospitals and I was refused the right as a surgeon. They crippled the institution which I joined. I could not practice surgery because I had no place where I could practice it."

And then, what do you find out to be the truth? Dr. Brown told you he never employed him as a general surgeon to do general surgery; that when he employed him he employed him to do minor surgery such as is done in a clinic; that he did not consider that he had the qualifications which would give him the privileges of the hospitals of the District of Columbia.

And when Mr. Kirkpatrick was on the witness stand he made this answer, and I want to repeat it to you now. I said, "Mr. Kirkpatrick, did you know anything about the qualifications of Dr. Raymond E. Selders?" He said, "No." I said to him—a trustee in 1937 and president of the organization in 1938—"Did you make an investigation into the qualifications of Dr. Raymond E. Selders?" He said, "No; and I have no apologies to offer."

That man was to take care of the surgical wants of five thousand or six thousand people, and the president of the organization sat up there and boldly accused all of these defendants as being in a conspiracy against them.

He said, "In July we sent another final plea to the hospitals to admit this man."

This man who had but one surgeon to offer these subscribers would inflict on them a man whose qualifications he never knew and about which he was so little interested that he never made an investigation, and he had no apologies to offer.

I think apologies are due to the subscribers of G. H. A. for a lay administration of that character and that type.

Now, what do we find about Raymond E. Selders? I do not like to talk about other men, particularly when they are far away and cannot answer; and I do not like to accuse any witness, or characterize him, who appears on this stand. It is an easy thing, ladies and gentlemen, for a lawyer to stand here and use harsh language and call names. But that is not what you want. You want some help so that when you go out into the jury room, where these questions come up in your minds and you disagree, you will find somebody who maybe can help you to coordinate the evidence in the case so that you can sit down to a deliberate judgment in a most important matter.

You know Dr. Raymond E. Selders is incompetent. You know that he has no more right to enjoy the wide privileges for which he asked permission than I have. That man asked permission to do anything in this wide, wide world with you when you are asleep and there is nobody there to see what is being done. He wanted the privilege of a general surgeon who, without supervision, without anybody there to watch and stand over and see that he was doing the right thing, could operate on any man for any thing, or on any woman, because he asked for the widest privileges as a gynecologist. He wanted the widest privileges that the most capable, able, and experienced surgeon alone enjoys.

And then they laughed at Dr. Mattingly because they said he wrote a letter when he was asking for permission to go before the Grand Jury, and they said he boasted of the fact that he it was who was responsible in his way for Selders' rejection at Sibley Hospital.

Out of the same files we drew Dr. Mattingly's letter. I read it to you on the last day that testimony was taken. It was written on Christmas day, 1937, when, if ever, a day opens and closes when the heart of man is most at peace, when he is least likely to be writing things unfairly. And if you have ever heard a better exposition of the reasons why one doctor, who is a member of the staff of a hospital, disapproved the application of Dr. Raymond E. Selders, then I do not know where to go to find it.

He said, "This man seeks privileges which are wider and broader than any we enjoy here in the District of Columbia, and we do not know him."

As you heard Dr. White say on the stand, when a man makes application for privileges in the District of Columbia hospitals usually somebody knows him, and they will say to Jim or Joe or Charlie, "Do you know this fellow?" "Yes." "How is he?" "He is all right." "Have you ever seen him operate?" "Yes. He is a good man. I have seen him and I know him. He is capable, he is able, he is honest, he is energetic."

But who knew Dr. Selders? Not only did we not know him, but we had difficulty in finding out anything about him. First, when the application was made at Sibley you recall, almost within six or eight weeks, long enough to investigate the references which were given, his application was rejected because they said, "We can't get any replies from your references."

So then Selders wrote his references, I presume, because he then wrote a letter to Dr. Taylor, who is now dead, and he said: "I understand now you have heard from my references. Won't you reconsider?"

Immediately came back the answer that they had read his references and they saw no reason to reconsider.

You remember, with reference to the first application, that we put the Coroner of the District of Columbia on the stand, a man who is now in public office and has been for years, and he checked on the side of his report, "We need more information about this man."

Don't you think that when a hospital is called on to give the right to any man to do anything in that hospital on his own judgment and unsupervised, it is in the interest of the patient—or is it a conspiracy to restrain G. H. A.—that they examine the qualifications of Dr. Selders?

You go down through all the hospitals, and most of them, or a great share of them, took the recommendation of the Washington Academy of Surgery; and the Washington Academy of Surgery made an investigation and reported that in the judgment of those surgeons—and it is composed of the finest surgeons of the District of Columbia—they did not think he was qualified.

And they indicted the Washington Academy of Surgery just because those surgeons, who know better than anybody else whether a surgeon is qualified or not, recommended to the hospitals who sought their advice that they did not think this man was qualified. That judgment was considered so ill-advised, so reckless and so unworthy that they dragged the Washington Academy of Surgery in here as a defendant.

Then, do you recall that when Dr. Borden, who is not a defendant here, was on the stand, who is a member of the Washington Academy of Surgery, he said, as I remember it, that it was a John D. Moore to whom he wrote in Hugo, Oklahoma, and he got a reply back from Dr. Lee in Pennsylvania. We brought Lee down here. You saw him. He is the man who saw Selders; and when the Washington Academy of Surgery asked Dr. Lee for a recommendation, Dr. Lee said, "I understand that they gave him chances in Worcester far beyond what we thought he was capable of."

That was the only letter which we got. And then, in order to disabuse your minds of any possibility of withholding something from you, because the argument would be made, as it was made here yesterday, that we wrote to John D. Moore when we should have written to John T. Moore, we brought down the application which was sent to the Washington Academy of Surgery, showing John D. Moore, and the address that we got was the address to which we wrote in Hugo, Oklahoma.

The statement was made that he did not live in Hugo, Oklahoma. You don't know that and I don't know it—I do, but I cannot tell you. The statement was made that he did not live in Hugo, Oklahoma. There is absolutely no evidence in this case as to where he lived or did not live, and I have just as much right to say that he lived in Hugo, Oklahoma, as some one else has a right to say he did not. I happen to know what the fact is, but I cannot disclose it to you because it was not proved.

Then we finally get to a letter which was characterized to you yesterday as a "muckraking" letter with reference to Dr. Selders. Do you remember, in the Garfield case, where they attacked Eisenman's inter-office communication where Dr. Eisenman said, when he passed on Selders' application to the board, "This is not a run of the mine case" or "run of the mill," or some such phrase as that, and that on the face of it it seemed as though this man had just as much qualifications as some of the others in the hospital, and "therefore if you are going to refuse his application on other grounds than qualifications I wish you would state it so that the administrative board will know."

They offered that in evidence. Why? Oh, that looked just like the kind of a letter they wanted, because then they could argue here that the superintendent of the hospital was bringing it to the attention of the Executive Board that he had qualifications, and yet they rejected him. That letter was right in the same file (indicating). It was written to Mr. Castle and it was criticized and characterized as hearsay upon hearsay, not worthy of credit or belief. We brought Mr. Castle down here before you, and he is a man who has been in public life practically all of his life, and finally held the responsible position of Under Secretary in what is perhaps the most highly respected department in our government—he was Under Secretary of State. That is the type of man he is. He is on the board of directors of Garfield Hospital. He was interested, naturally, in the Selders case because the newspapers, as Dr. Macatee told you, were blasting the hospitals; they were blasting the District of Columbia Medical Society with reference to this man Selders and making accusations just as they have been made to you, and for the first time in this court room the truth has come out, and of course they were wary and chary.

Do you remember that the Washington Academy of Surgery was so careful that they said, "For the sake of the public let us not consider Selders' connection with the G. H. A. at all in this matter"?

Do you recall Dr. MacDonald, the Coroner, when he said that at Casualty Hospital he said to them, "Let us not consider anything about his connection with G. H. A."?

They were hurling charges at the hospitals and the doctors, so they leaned over backward. And then this fine, estimable gentleman, the Under Secretary of State, wrote to this man in Worcester. Was he responsible? He is the president of the Norton Company and he is connected with various hospitals and is, I believe, head of the Worcester Museum. He says:

"Mr. Higgins is a very careful individual who would not write anything which he had not checked on pretty carefully."

Is that the sort of a letter that you can kick around the floor of a court room and say that it is rank hearsay on hearsay?

He told you that Dr. Selders' work at the City Hospital "did not meet with the approval of the superintendent as to the way he handled himself with the interns, nor the approval of the surgical staff as to his accomplishments as a surgeon. The appointment accordingly was not continued after the first year."

He was employed here through an employment agency in Chicago. If he was the surgeon which they try to make out

he was he would not have been in Washington; he would have been in Worcester. But they did not employ him after the first year.

I am not going to repeat the letter, which I am sure you remember, with reference to his sister. But Mr. Higgins adds that "It is quite possible I may be able to get some more detailed information by consulting with the doctors who knew him." He says, however, that "It seems as though the above, for the accuracy of which he vouches, would be about enough to dispose of him both as a surgeon and as a man."

I think it does.

There was a great deal said about the rejection and refusal of other doctors of G. H. A. Remember this—and the court will so instruct you—that hospitals have the right to lay down rules and regulations. You have heard every single doctor tell you that the right to practice medicine in a hospital is not an absolute one; it is a privilege; and therefore a hospital can reject applications. And you saw in the evidence here rejections of applications of other doctors, and some of the members of the District of Columbia Medical Society, and by Dr. Titus, who received another letter from Texas. Dr. Titus was on the committee of the Gynecological Society of the District of Columbia. He told you that there are members of the Gynecological Society themselves who were rejected as applicants on the staffs. There were doctors rejected because of the rules of the hospitals. Notwithstanding all those rules and knowing those rules, these people still kept thrusting on them these applications for Dr. Selders' appointment, although they knew that under the rules, so far as Casualty Hospital, for instance, was concerned, for fifty years he could not have been admitted. And you know from these other letters which I have not the time to read to you he could not have been admitted if he had never seen G. H. A., because he was not qualified to do the things for which he asked the privilege of doing; and even over at Columbia Hospital, when they gave him the privilege of simple obstetrics, he never utilized it.

Do you recall that Kirkpatrick, on that witness stand, told you that they had seventy-five elective operations when he took office in 1938 and that they could not have those seventy-five operations in 1938 because we would not let Selders into the hospitals. Do you remember that testimony? When we got Dr. Price on the witness stand, one of their own members, what did he tell you? Just as Dr. Brown has said, Dr. Selders was not competent to perform the operation "and we did not have the funds with which to perform them," and he was advised by the Medical Director, who then was Dr. Selders, to delay them, hold them off, make excuses. And yet, if we had not found Dr. Price for you, you would still think that we had kept seventy-five people who wanted operations from getting them.

The fact is, there is not a hospital in the District of Columbia that ever refused to admit a patient. They may point to Sibley, when Dr. Taylor sent a memorandum saying that no patient of G. H. A. is to be admitted into the hospital. Three times Dr. Taylor wrote Kirkpatrick and said to Mr. Kirkpatrick, "The question of your association is before our board of directors, and until they act I cannot give you any reply." But there has not been one single instance where a patient has ever been refused hospitalization. On the contrary, the hospitals of the District have stood up to the reputation which they have always enjoyed for their experience and hard work to get along financially, of taking care of every sick person ever brought within their doors.

And that brings me to this last consideration. Not only was the situation that Group Health Association brought before you in connection with Dr. Selders' rejection made much of, but more particularly there were five or six cases instanced where it looked, on the face of things, like the hospitals had sunk so low in this conspiracy that they had actually refused to take care of people hit on the public streets, because they were members of G. H. A.

You will recall that line of testimony, that series of cases, which started, I think, with Miss Abbott, the lady who was struck by an automobile and was brought down to Emergency Hospital. And to me, on the testimony, it seemed as though they did nothing for her as soon as they found she was a member of G. H. A. But on the following day they took an ambulance and carried her to Garfield. You remember that case well, I am sure. I wondered, Is it possibe that, after all, this feeling had become so intense that a hospital would not take a woman who had been hurt on the street and give her treatment?

And then we went to look over the files, and out of the same file we got the truth. And that is another pebble in the shoe.

Miss Abbott was brought to Emergency Hospital. She was brought into the hospital and given complete emergency care. We brought you the nurse that took care of her. We brought you the two interns, one of whom we found at Lorton. Do you remember him? We brought him up here to tell you the truth and answer this base, nasty insinuation made against one of the honorable hospitals of this city. Sometimes it is hard to restrain one's self when we hear decent, honest people baselessly charged in such a fashion on such a groundless imputation.

Only yesterday the prosecution told you that the woman was so badly hurt that she had to stay in Garfield Hospital for three weeks. I read you the Garfield chart so you might know how badly that woman was hurt. I thought at first she had a broken leg. I really thought that from the testimony you would find that here was a woman who was struck down on the street, her leg was broken, and she was taken to a hospital and it had refused her hospitalization. Then we find that Miss Abbott wanted Dr. Selders—and if you want to know something about this clinical service, get it from Miss Abbott. At 10 o'clock at night when she needed help, could she find it in G. H. A.? Could they locate Dr. Selders? They 'phoned until midnight and could not find him. When you need a doctor that is when you want him. They could not find him until the next morning, when he showed up at 10 o'clock. They criticized us because in the opening statement I think I mentioned it was 6 o'clock. But you find that Miss Abbott never had a broken leg. I don't think there was ever anything the matter with her. Don't you remember how I read from the chart, "She slept, she slept, she slept all day"? She stayed there twenty-one days. Why? Because, under the by-laws of G. H. A., she gets twenty-one days' treatment for nothing at the hospital; and she had a good rest.

Then we come to the next one. This is one that I thought was worse than the first, until I found out the truth. That was Mrs. Austin. Here was a poor lady who was struck by an automobile or a trolley car, one or the other, and was brought down to a drug store at 14th and F or 14th and Pennsylvania Avenue, and her daughter actually told you that she never got a bit of treatment, and she took her home, out of Emergency Hospital.

Once again it looked as though Emergency Hospital should be closed. But what did we find to be the facts? First of all, the daughter is a director of G. H. A., and she testified against these men for conspiracy to restrain G. H. A. Dr. Selders had known for months, G. H. A. had known for months, that no privileges in Emergency Hospital could be given anybody who was not a member of the District of Columbia Medical Society, and that that act was passed by the board of directors long before G. H. A. was ever dreamed of; and yet, right in the face of the Emergency Hospital's staff and its rules and regulations, they kept thrusting back into the face of the hospital Dr. Raymond E. Selders, just as now they try to ram him down your throats.

What is the truth about the matter? Mrs. Austin was offered anybody she wanted on that staff, any doctor—and they were the most responsible, reputable, able and experienced in our city. She said, "No; I want Dr. Selders." What happened? Her daughter took her home. I asked her, when she was on the stand, "Did some one from G. H. A. come to see your mother at home?" She said, "Yes."

I said, "Who was it?" She said, "Dr. Halstead."

All this made good subject matter for public comment in the press. When we put the little nurse on the stand, whom we later found out at Walter Reed Hospital—we had to fish around for all these witnesses, nights when you did not know we were working; we had to go out and find them so that you might know the truth. We brought that little nurse here, and we found that Mrs. Austin had walked out of the hospital and never took an ambulance.

Now we come to another case, that of Mr. Hardin. He was the young man who was taken very sick with acute appendicitis. He was treated by a doctor in Arlington County, Virginia. He was taken to Sibley Hospital, and there he was operated on and his life was saved, because he had a serious appendix. He had not been in the hospital five minutes before a G. H. A. man, a brother of Mrs. Hardin, came in and once again started to put the hospital on the spot, making demands right then and there while that man is up in the operating room, being prepared for the operation, and while the surgeon is preparing himself for that operation—demanding Raymond E. Selders, whose privileges had been rejected five months before, be given the privilege to operate on that man.

They had those cases paraded before this jury in an attempt to arouse honest indignation which would naturally arise in

the heart and soul of any fair-minded person to hear of conduct like that, if it were true.

Then, what did we find out about Miss Tew? Miss Tew was another case. She came to Sibley, you remember. It was painted to you yesterday that she came up there and was given morphine and was removed from the hospital under morphine. What is the truth about that?

THE COURT:—You said Sibley Hospital, Mr. Leahy. I think it was Garfield.

Mr. Leahy:—Yes, your Honor. On Jan. 25, 1938 Garfield wrote a letter to Raymond E. Selders saying that the privileges which had hitherto been granted him had been withdrawn pending the determination of the legality of G. H. A. On the 26th of January he took Miss Tew to Garfield, and Garfield Hospital said to him, "Well, perhaps you did not receive the notice. Go right in and take care of her."

Could they be fairer than that? They knew that he had no right in Garfield Hospital to treat patients except in the case of an emergency, and he sent in Miss Tew as an emergency case. You remember that Peggy O'Connor took the witness stand. I thought that Miss Tew had been stricken, like Mr. Hardin, with a bad appendix, but we found that she had been lying home in bed for a week, and the doctor said that it had subsided. But then, once again, knowing that he had no right to do it whatsoever, but trying to get in under the theory of an emergency, he has Miss Tew come to Garfield Hospital for an emergency operation. It was not an emergency operation at all, and it was not an appendix case at all, because on the chart there were written words to the effect that he was going to make a mid-line incision; he was going to explore the abdomen, and while he was doing that he would remove the appendix. Then it was discovered that it was not an emergency case; that Dr. Selders had no privileges there, and they said Miss Tew could take anybody on the staff—"any doctor or surgeon you want is yours, except that we do not permit doctors who are not on the staff to function in the hospital."

But rather than to do that, Miss Tew left the hospital—and they left the testimony. They never told you whether Miss Tew was operated on or what became of her. They wanted to leave it up in the air for suspicion, again, so that you would wonder or think and, thinking, believe that Garfield had ejected a poor girl from its doors who was in a situation of emergency.

And then comes the last one, the Mary Frances Stuart case. That was so bad that Mr. Penniman called up Dr. Neill one afternoon and had him go up on a Saturday afternoon to complain about that case. I thought that Mary Frances Stuart was going to die, before counsel got through telling us about it. And once again we had to find out what it was all about.

She was not a member of G. H. A. at all. She was a laboratory technician at G. H. A. She was taken very sick in her apartment. She advised her room mate or a friend that she wanted Dr. Allen E. Lee. Allen E. Lee came and pronounced it a case for surgical attention. He called Dr. Brown. Dr. Brown said, "Very well. I recommend Dr. Schoenfeld." Allen E. Lee got in touch with Dr. Schoenfeld and they made arrangements to use the hospital. Dr. Lee said he met Dr. Schoenfeld coming down the corridor as he came in the front door; and Mary Frances Stuart was operated on that morning at 11:30. That is the case.

And yet that is the case that Mr. Penniman complained about and would have you believe that some one in the District of Columbia Medical Society had absolutely refused to have anything to do with Mary Frances Stuart. He said something about Dr. Schoenfeld's saying, "If she is your private case I will operate on her; otherwise I will not."

Now, that arrangement was made by Mr. Penniman with the whole troop of the board of trustees of G. H. A. They came to see Dr. Neill to discuss that case, it was so outrageous. The papers were filled with it. They saw to that. They wanted to put the hospital on the spot.

Where does the conspiracy come in? Was there a conspiracy there to ruin the reputation of our hospitals? Were the hospitals trying to maintain the standards which they had always maintained and to enforce rules and regulations which they had always enforced regardless of who the doctor was or to what organization he belonged?

And then Penniman went back and checked with a letter; and when I showed him the letter there was not a word about the Mary Frances Stuart case in there. I said to him, "I thought you went up to talk about that case."

"Well, we did, but we got shunted off on another one, because Dr. Neill said he had never heard about it."

Every little piece of evidence, where it might be possible to urge it against the District of Columbia Medical Society, something that would arouse your honest indignation, they have culled out over a period of a year or a year and a half and brought before you in order to, if possible, poison your minds.

THE COURT:—We will take our recess now until 1:30.

(Whereupon, at 12:30 p. m. a recess was taken until 1:30 p. m. of the same day.)

APRIL 3—AFTER RECESS

(The proceedings were resumed at 1:30 p. m., at the expiration of the recess.)

Mr. Leahy:—If the Court please, and you ladies and gentlemen of the jury, I rather think you will be glad to see me sit down instead of standing here, but there are just a few points I want to cover and I will be through.

You will recall that just before recess for luncheon we discussed the situation with reference to the Washington hospitals. In the argument yesterday you will remember that it was said that the Washington hospitals came into this conspiracy because of the power which the District Medical Society had over the hospitals, through the membership of the Medical Society members on the various staffs of the hospitals; and then having this power they had the machinery by which to enforce it; and, therefore, whereas the hospitals are in the strange and unique position of not being active conspirators in the sense that they willingly joined at the outset, nevertheless they felt the power and compulsion of the District Medical Society to the degree that they elected to become conspirators. I don't know whether you would call it in self defense or because they were afraid. It was said that the staffs of the hospitals would be unmanned and you remember the argument was made that they had that power which for any capricious reason at all the District Medical Society could exercise to the disadvantage of the hospitals.

Now, what was that power? They said that power was the power to approve, and you will recall that just as the American Medical Association approved certain hospitals for intern and resident training, so the District Medical Society was acting for the same restraint in the same sense that they were watching to see to it that the Washington hospitals should not themselves fall from the standards which the hospitals of the District of Columbia should maintain.

After all the only people who really know whether the service in a hospital is good, bad, efficient or otherwise, are those who have been trained, and who know what service is being dispensed in the hospital; and I may state that can be known only to medical men; but the power to approve which the prosecution adopts as evidence of the power of compulsion is something under which they want you to believe the District Medical Society compelled the hospitals of the District to act.

Now, once again, may I impress on you that if there was any indication in this case that the District Medical Society was trying to compel or force or put pressure on that hospital, they would have found it. It wouldn't have been left to a guess; to imagination; to your surmise, and it would not have been left to the able and capable argument of the prosecution to try to make you think it was exercised.

The truth about the matter is that the fact is directly to the contrary. The District Medical Society, throughout this case, was careful to see to it that in its conduct nothing could be charged against it, with any foundation in fact or reason which they have now charged before this jury. The statement has been made that by the capricious exercise of this power of approval they could compel the hospitals to do this or that. But did they exercise that power? Did you hear of a hospital stricken from the approved list by the District Medical Society? Did you hear of any pressure put on any hospital with reference to approval or disapproval? Why, do you think, in all honesty, that men of the type these eight hundred men were, who are in the Medical Society of the District of Columbia, would capriciously disapprove a hospital whose staff is made up mostly of its own members? Didn't you hear Dr. Willson on this stand state to you that in a contest between the District Medical Society and the hospitals men on the staffs of the hospitals would stand back of the hospital. Why? Because the hospital takes care of the sick; you and me. The hospital renders public service and takes care of its patients; and no decent, honorable man would quit the staff of a hospital because forsooth somebody on the District Medical Society, let's say capriciously, would disapprove that hospital.

But now, remember—as I told you—during the course and period of this matter the charge is made that the hospital committee of the District Medical Society was exercising this very pressure of power to approve or disapprove, and holding it as a threat over the heads of the hospitals; and then they said the machinery through which they could operate this power

was this fifth section, which was offered by way of amendment, and they add the white list, which they like to call it, which was an approved list sent out July 29, 1937.

First, let us see whether the evidence anywhere can relieve your minds of any doubt which you may have with reference to this argument on power.

Now, remember the machinery by which this power was to be put into effect was this white list; this amendment to the constitution. Remember further that the doctor who headed up the hospital committee was Dr. Warfield. Remember that the last report of the hospital committee of the District of Columbia was March 28, 1938 in the Executive Committee meeting and April 6 in the District Medical Society meeting. In other words, that report was approved first by the Executive Committee and then by the whole society.

Now, this report was called to your attention; argument was made about it to you yesterday. What about this capricious power of approval? What about this practice of the District Medical Society to approve or disapprove? This is the report:

"The Hospital Committee has purposely avoided the submission of the list of local hospitals for approval of the Medical Society."

They purposely didn't do the very thing which he argues they might have done. The fact is that purposely they did not submit any list for approval to the District Medical Society, so the argument which has been made to you couldn't find a basis in the evidence for making it. What else do they say? Why did they not submit it?

"The eleven local hospitals therefore remained approved by the Medical Society as of Nov. 4, 1936."

And nobody ever heard of G. H. A. before June 1, 1937.

Here is the reason why it avoided the very charge that has been made:

"To have attempted to reapprove these hospitals last fall or this winter"—

the winter of 1937—

"would have detrimentally created conflict between the Medical Society and some of the local hospitals because of attempted enforcement of the provisions of chapter IX, article IV, section 5 of the Constitution of the Medical Society."

Rather than create any conflict; rather than do the very thing which they argue they had the power to do they refused to even approach the question of a conflict with the local hospitals growing out of section 5, which I will come to clear up for you in a few moments.

And what is the last line of that report:

"The Hospital Committee recommends that the Medical Society continue their full cooperation and avoid conflicts with any of the local private hospitals."

Doesn't that sound like a conspiracy? First of all, if they were all in conspiracy they wouldn't be in conflict, because before you can find a conspiracy you must first find agreement, not conflict; and here is the last word that Dr. Warfield writes in his report, because the Hospital Committee went out of existence July 1, 1938. The last admonition which that report leaves with the Medical Society is:

"Cooperate with the hospital; don't have any conflict with them."

Is the District Medical Society now trying to advise their members to act in the public interest, for the good of the people of Washington, or are they trying to create a conspiracy in order to restrain G. H. A.?

Now, let us come to section 5 of this machinery. I think we have heard more of section 5 and the white list than anything else in this case.

What is the white list? In the summer of 1935 there had been some question, as Dr. Willson stated to you on the witness stand, with reference as to how doctors in the District Medical Society could join up with these compensation clinics, which were then coming into operation under the compensation law. It goes back once again to "contract practice," and you will recall that in June 1934 the American Medical Association had expressly held that contract practice was not per se unethical, and they gave as a guide to the members of the American Medical Association ten principles under which members should conduct contract practice. These compensation clinics had contract practice within the limitations discussed in these principles, and from the summer of 1935 down to January 1936 this section 5 was under discussion; and the way the description was phrased in there of these clinics was that where the profits of the clinic did not inure to the benefit of the Medical Association then the contracts between the member of the Medical Association and the clinic should first be approved. Why? Because, just as Dr. Cabot stated—"I wouldn't permit any interference between doctor and patient; there cannot be any," and, therefore, no third party ought to come in to interfere between doctor and patient.

Here was a clinic making profit out of the use of doctors' services and keeping it for themselves, which is contrary to the public interest, however one might look at it, and we don't have to be a doctor to understand that. There then came an amendment in January 1937. Remember, the District Medical Society never heard of Group Health until June 1937; and then in March came the amendment, and that amendment was that they included within ten miles of the District of Columbia the operation of this section, and that required that any complaint with reference to any doctor connected with any clinic should be determined, not by the Society, and not by anybody but the Executive Committee of the Society.

Now, in January 1937 everything in that amendment had been fixed and settled except the reference to the Executive Committee as the proper committee for entertaining the complaint. That was passed in March 1937, and nobody ever heard of G. H. A. for three months thereafter, and yet they grasp that; they tear it out of the constitution of the District Medical Society, and they say "That is the one you were going to use in order to put into effect the white list, the boycott of G. H. A."

Now, the white list was prepared because, as the District Medical Society had then enacted this amendment to the constitution, as Dr. Willson told you, they authorized an approved list of clinics which had already been investigated and were determined to be operating in accordance with the proper standards in the public interest.

That white list was prepared initially in May 1937. Again I call your attention to the fact that that was six weeks before G. H. A. was ever heard of. Then they say on July 12, when you finally enacted the white list you modified it and you changed the words "connected with" to "employed by"; and they say Dr. Macatee, whom they didn't indict, whom they didn't even name as a conspirator—Dr. Macatee proposed that phrase "employed by" the United States instead of "connected with" the United States, did so in order that it wouldn't include G. H. A.

Now, do you think Dr. Macatee had anything like that in his mind? Do you think Dr. Macatee is some lawyer that sat there and thought "We will put in one of those weasling phrases," so that four months later, when the clinic opened up, the white list should be made to refer to G. H. A.?

And on July 29, in accordance with the resolution they sent to each one of the District Medical Society members the approved list.

They talk about medicine not being in favor of contract practice, and those are eight or nine clinics with some of the finest doctors in Washington connected with that. They even referred to Dr. Neill's connection with one of them. There is one Dr. Charles White is connected with. Eight or nine approved but forsooth we didn't approve G. H. A. How could they? Certainly on July 29 when Group Health didn't have a staff, you couldn't put it on the clinic approved list; and, furthermore, all the letter of July 29 was to each member of the District Medicall Society telling them "If you have a contract kindly submit it to us so that we may see whether the contract ought to be approved."

Now, the Court will tell you that unless you find that everything that has been done with reference to Section 5 was done in pursuance to a conspiracy, then this organization, just the same as any other organization to which you might belong, has the right to prescribe its own rules and regulations; it has the right to have its rules and regulations observed by members of the Society. Why? Because no doctor is compelled to become a member of the District Medical Society. Dr. Brown, you recall, stated on the witness stand "I am not a member of the District Medical Society," when he was talking to Dr. Lee and Dr. Scandiffio. He said "They have no jurisdiction over us," and they did not, and have not. They haven't any jurisdiction over anybody who is not a member of the District Medical Society, but they do have jurisdiction over their own members, and they have a right to prescribe rules and regulations. Why?

Because whatever is done by a member of the organization reflects on the organization, and if an organization continues to permit a member to violate its rules and regulations, after all the Society is then put in a position which Dr. Macatee says Garfield would have been put in, of aiding and abetting whoever it was, was the subject matter of the violation; and, therefore, the District Medical Society, having the right to do this, only did what it did, in what it believed to be the proper practice of medicine. It only did what it did ultimately for the good of the patient and the good of the people.

Now, G. H. A. never submitted any contract. You remember I said to Dr. Macatee, after the 29th day of July, "When you left that meeting, saying to those men 'We are asking for information so that we may in turn advise our membership as to what attitude to take in the matter,' did you hear from G. H. A. again?" He said "No, never," and now they complain because they are not on the approved list. They couldn't be on the approved list on July 29 because they didn't exist in fact until November 1; and they couldn't have been on the approved list before that. They could have been on the approved list just the same as the nine other clinics were on the approved list if they submitted their contract for approval, and it was approved. But they refused to do anything in this regard or cooperate in any way, shape or form, just as Dr. Cabot said again, and I repeat: "because the lay body and these private clinics are tempted to interfere on the medical side of the clinic"—a clear distinction between what you find in hospitals where the administrative board of business men takes care of the business of the hospital, but the medical staff of the hospital are given charge of the medical side and conduct of the hospital.

Now, that is section 5. That is the white list.

Oh, but they say, "They sent the white list to the hospitals." There is this power again, and machinery by which it operates. Notwithstanding the fact that in evidence there is the clear refusal to exercise any power of approval in order to avoid any conflict with what? With what the hospitals might do with reference to section 5, and the white list?

And you will note on the white list—I haven't time to read it all over to you—but you will remember the testimony; they approved practically every organization in the District of Columbia, which was then in fact doing what? Practicing medicine; and they approved all the staffs of all the local hospitals. Why then shouldn't the hospitals have the statement made by the medical society that it approved the staff of the local hospitals?

Do you think back there on July 29, when the committee of the District Medical Society was still in force, still trying to get some information which they never could get—two months before G. H. A. ever opened its doors—that they sent that around in some conspiracy to crush or restrain G. H. A., which had not at that time opened its doors? There is a limit even to the stretch of our imagination and we are supposed to base our judgment on facts, and not on guess and surmise.

That is the white list. In their desperation, trying to find something to piece out and make you gentlemen and ladies believe beyond a reasonable doubt a conspiracy in this case exists they have combed the records of the American Medical Association and the District Medical Society, and they have taken every minute and piece of a minute, every word that was said by any man at any time, whether the Society took action on it or not; whether it expressed any opinion on it or not; and they have hurled it at us here as evidence that we were in some gigantic conspiracy, nationwide, with the tremendous power of the American Medical Society and the District Society—all one hundred ten thousand doctors, all of our hospitals and their staffs, medical and administrative, groups of agents and servants—all involved in this gigantic conspiracy to crush an organization which, I repeat, had not yet opened its doors and about which we never said "Boo"; concerning which we never tried to restrain them in the slightest degree. We never did a single thing to prevent them from doing any and everything they wanted to do; and we never did a single thing to restrict a single doctor who was on the staff of G. H. A. They say you did by expelling them. Dr. Scandiffio; and with your threatened expulsion of Dr. Lee. Did we?

The Court will tell you that the District Medical Society, so long as it was not engaged in this gigantic conspiracy which they picture, had the right to have these regulations and enforce them. In his application for membership the prospective member agrees to abide by these rules and regulations. Again, the District Medical Society is a voluntary association. Both Dr. Lee and Dr. Scandiffio knew that when they came into the Society, and while members of the Society; every rule and regulation. They had received the notification of July 29, and as honorable and decent men just as soon as they chose of their own volition to become a member of the staff of G. H. A., what did they do? They chose to resign. They had the right to do that. They could resign from membership if they wished; and they knew they should. And Dr. Brown, who was not a member of the District Medical Society; who was the Medical Director of G. H. A. told them that is what they should do, and they resigned. And then comes one of the strangest behind-the-scenes attack on the District Medical Society that you have had to listen to as jurors in this case. Right then, Mr. Penniman and Mr. Zimmerman, and a corps of attorneys representing them, felt that once more, if they could, they would try to put the District Medical Society on the spot; and what did they do? They got together and said to Lee and Scandiffio: "Take your resignations back. Write out a contract. Present the contract to the C. C. & I. N. Committee and demand a trial. We will put them on the spot,"—and back came the withdrawals of resignations, almost in identical words. And when Dr. Lee was on the stand I said "Did you get some help there?" He said, "Yes, I did." "Who were you talking to?" "Mr. Penniman and Mr. Zimmerman," and I think he said "Mr. Russell," chief counsel of the H. O. L. C. Just a cleverly worked-out scheme so that the matter could be presented to you ladies and gentlemen as though it was the result of regulations and the white list. They were prepared by lawyers, coached by lawyers, defended by lawyers; and what happened for four days? That is in evidence. Dr. Scandiffio, with four lawyers, was tried on the question of his violation of two sections of the District Medical Society regulations.

Do you remember when I read to you the by-laws of G. H. A.? Did you see where G. H. A. was careful to preserve the rights to expel anybody, and who was it who could expel? The board of directors. And for what? For any good reason which the board of directors thought. Any appeal from that? No. Any protection to the subscriber? None.

Here was accorded to the doctors the full protection of their interests as to whether or not they had violated any provisions of the constitution of the Medical Society; and there has never been a final adjudication of that because the evidence is that the appeal has been taken to the American Medical Association Judicial Council and no action has been had on it yet. Why should there be with this furor and these accusations? What could medicine do under such circumstances?

Here they are threatened with the full power of a governmental agency and backed with all the advice of counsel trying at all times to make an embarrassing situation for our doctors. And what have our doctors done? What have they done to Dr. Scandiffio now? Then he was on the staff; now he is Medical Director. Have we tried to restrain G. H. A. by making him get off? Have we tried to restrain G. H. A. in breaking up his services? Why, hasn't Willson, Dr. Willson told you that he has turned over his own patients again and again to Dr. Scandiffio. Is there any ill will about it? Hasn't he told you that he considered him an able pediatrician, and that he told these young mothers to call him in? "My work is done: I will be glad to have you."

They talk about boycott; about not getting in the hospitals; about not being permitted consultations, and here you have these men, defendants, hospitals, telling you under oath, with no contradiction, the contrary.

Now, then, we come to the last point. They say "If you want to see a conspiracy in full operation just take Dr. Willson's resolution of November 3."

Why, ladies and gentlemen, they talk so much of that resolution they even printed it in the indictment. When you get in the jury room look it over: "Since we have the apparent right of hindering" or something of that sort "G. H. A."

And that they construe to be such material evidence of the conspiracy on the part of the District Medical Society—and how they were going to conspire is not known because a hospital is a private institution and can act individually and did act individually—and then we get the truth once more.

Dr. Willson came here and told you just how section 3 of the resolution of November 3 arose. Conspiracies don't arise in the manner in which they have charged here. Here you have an organization in which two hundred or three hundred are present. Did you ever get in a meeting of that kind where there wouldn't be differences of opinion?

Dr. Sprigg, another defendant, thought the hospitals should be acquainted with the fact that section 5 was somewhere tucked away in the constitution; and asked for cooperation. Now, remember, if we ask anybody to help us we are criminals. Somewhere they have advanced against Hooe that he said "We ought to call the hospitals together." Right in evidence here is proof that G. H. A. called the hospitals together. You remember the discussion of the appointment of the man from Georgetown?

Now, if G. H. A. can call the hospitals together, can't the District Medical Society call the hospitals together? Or is it that all these men have lost all human rights as American citizens so that they cannot discuss with each other what should and should not be done. And Dr. Willson told you he didn't agree with Dr. Sprigg; didn't like the idea and sat down one afternoon hurriedly, scratched together the resolution of November 3, and he called up Dr. Christie. "Do you think if I introduce this that I can check the Sprigg letter?" And "Can I beat Sprigg out in this vote?" And what happened? He

said the closeness of the vote said "I was right." I think he said it was 65 to 53. What did he do? They talk to you about the preamble and the whereases. Get to the real meat of the thing. It was a resolution recommitting the whole idea to committee, so that the committee might study the matter out, and so that there would be no mistake on the part of the District Medical Society, so that they might act as responsible, fair-minded men, and that is where it went; to that committee. And then, even yesterday, counsel for the prosecution admitted that on November 11 the District Hospital Committee recommended out—and I use his adjective—"an innocuous resolution." That is Dr. Warfield's committee; and those are the facts in that connection.

And then here is where Dr. Yager becomes a conspirator. The resolution of Dr. Warfield on November 11 was that the hospitals should take care of G. H. A. patients, but that members of the staffs of the hospitals should be recommended to attend them; just the rule that had been in effect so long in some of the hospitals, and yet they are all charged to be in a gigantic conspiracy because they had these rules; and Dr. Yager says: "Wait a minute, it doesn't appear whether G. H. A. doctors are on the staff. I move this matter be recommitted," and he becomes a conspirator for making that statement to recommit it for further study. And Dr. Warfield's committee brought forth the December 1 resolution.

Now, gentlemen, the only way that you can possibly distort the December 1 resolution into any agency for the accomplishment of any conspiracy is by saying that every one of these men have lost their every last good motive, their decency, because in order to avoid the very imputation now hurled at them—these men whom you are asked to brand as conspirators—they start the resolution, emphasizing the purpose of it: "For educational purposes only."

Is that a threat? Wasn't it just as easy for these men, if they wanted to threaten, to tell the hospitals of the District of Columbia what would happen if they didn't do what the District Medical Society wanted them to do. Why is it necessary to distort the language and try to make it read something different from what it is? Dr. Warfield said, "For educational purposes only. We ask that you seriously consider the recommendation of the American Medical Association with regard to membership on the staffs of your hospitals being limited to members of the District Medical Society." And there is where the matter dropped.

You cannot find anything in this evidence where they tried to put that into effect; and the Court will tell you that unless you find they first conspired and then did this thing in pursuance of the conspiracy they were within their rights; they had the same right to try to persuade a hospital that you have or I have to persuade you. They had a right if they believed it in the public interest and for the best interest of the patient to urge that the local hospitals have on their staffs members of the Medical Society,—not by threatening them; not by putting pressure on them—but certainly, as citizens of this country, as decent members of their practicing profession, they had the right to say to the hospitals which they have built; which they protect; in which their life work is done; that they keep going; in which they treat their patients—they had the right to say what they did: "For educational purposes only," and they need have no fear of any lawyer distorting their language or trying to convert what they did into an act of conspiracy.

Why, they would forego everything that is near and dear to them, professionally and personally, and everything decent and honorable in a man if they were men such as you are asked to believe them. I have never heard decent, honorable men have their motives impugned as these motives have been impugned in their effort to build, construct or reconstruct, model or remodel this so-called conspiracy. Out of isolated acts; isolated statements made by members, they have tried to fit them into a framed-up charge of conspiracy, within a frame that does not fit the picture or a picture the frame.

That is the end up until the Warfield report, and this Warfield report is that on which they seek to hold Warfield as a conspirator. Just imagine what Dr. Custis did to become a conspirator. He is a member of the staff of Homeopathic, and he wrote a letter away back in the first week of November to the District Medical Society; and he said "there seems to be some question about the attitude of Homeopathic Hospital with reference to, maybe it is section 5, and in order that you may know how the Homeopathic feels about this, I want to tell you that we voted that we would not have anything to do with any organization which was not approved by your medical society." They didn't have any such rule in effect and you will remember when Colonel Randall was on the stand. They put him on the stand. I said, "Colonel, let's turn over the minutes." We turned to the minutes which showed the enactment of that resolution. Dr. Custis was there with eight other businessmen. Mark you, those men whose names I read to you. One of them is in this bank over here on the corner of Seventh Street; another is an officer in the McLachlen Banking Company; another is in the real estate business in Washington here.

Now, Dr. Custis proposed this resolution. Colonel Randall disagreed with him. Colonel Randall said he wanted the business of G. H. A.; and they debated the thing back and forth in this meeting; the nine of them; and finally seven of the nine voted one way and two the other way. He said after that we were all one, and Dr. Custis was one of the seven. He is the one who had proposed the resolution; six others on that staff agreed with him, but Dr. Custis is indicted. Is that fair? Custis is indicted because he wrote that letter. Now, that is how far they have combed the testimony in this case to try to find something.

What have they against Dr. Hiram Reed? He sat as a member of the Executive Committee at the trial of Dr. Scandifio. That Executive Committee consisted of, I think, it has been read in evidence, thirteen or fifteen men. The others have not been indicted. The others weren't made conspirators. Some of them they select to be conspirators; some not. Just a whim. Just a whim and you can become a conspirator, sitting over there for two months charged with the violation of the law. Pretty careless and pretty serious thing. I wonder how long you think that an organization could exist so many years and, surely up to this time at least, not have been charged with anything, at least not more than with acts done for the furtherance of their organization and in the public good, will continue to act if they have to act at their peril; if every word they utter, every line they write to the inquiring public or the affiliated societies may be brought up years afterward to charge them as conspirators. Do you want Dr. Cutter to continue inspecting hospitals? Do you want him to continue trying to keep medical standards up in the medical schools? Do you want Dr. West to continue to operate these agencies to see that drugs and food consumed by the public are up to standard; to see that quacks and charlatans do not prey on the people? Do you want the American Medical Association to carry on what it has been doing? How can they carry on under a threat that if whatever they do their motives are to be impugned and questioned and they are to be compelled to sit over there nine weeks to answer charges of doing things which never entered their minds when the acts were done? Those are serious questions connected with charges of this character.

Now, let's go back to this final report: "All of the local hospitals are cooperating with the Medical Society with respect to Group Health Association." Isn't that too bad?

They seize that as evidence that there must be a conspiracy because there is cooperation. How can there be cooperation, ladies and gentlemen, I ask you seriously, in common sense, how can there be any efficiency in the operation of a hospital unless there is cooperation between the doctors and the lay administratives of the hospital? How can a hospital get on without cooperation, and yet if a man reports that the hospitals are cooperating with those people who have made them what they are he as well as the hospitals are charged, not with cooperating to insure better service for the public and medical care but to crush and destroy and restrain G. H. A. Now, the attitude of the hospitals has been shown. After Justice Bailey's decision on the question of legality, application to the hospitals were received by those hospitals and acted on. You heard Dr. Macatee on that stand testify that two applications came before him, and didn't he, as a member of that executive committee tell you that the Executive Committee had passed on those applications favorably; and the sneering imputation was to put into that action "Oh, you were afraid because of that indictment." How did Dr. Macatee know an indictment was coming down, and finally we learn that Garfield, with Dr. Macatee on the Executive Committee, had voted on the application and they did come down, at least one day before this indictment. Now, up to that time the doctors in the District Medical Society and in the American Medical Association here in Washington were in the position which Mr. Drayton stated to you he was in; which Garfield Hospital stated they were in: that during the time the test case was on file here in the District of Columbia to determine whether G. H. A. was legal or not—and you will remember I asked Dr. Cabot when he was on the stand: "Would you recommend a man for the hospital staff where you knew that the organization with which he was connected was then before the court for the purpose of having declared its legality or illegality?" and he said "No. I think I would wait for the result." And that is what they did here. Not that illegality is a defense. Don't think that any of these men had a

right to try to go out and destroy or restrain G. H. A. because they thought it was illegal; because all of us are supposed to know the law, but at the same time if you believe something is illegal then as Dr. Macatee in Garfield said "Let's wait until that action is determined, because we may find ourselves in the position of aiding and abetting an illegal organization; and then we would be in the position of aiders and abettors and subject surely enough to indictment for conspiracy."

Now I am leaving you with the word of assurance I gave you this morning. I told you that the criticism of Dr. Woodward in his article had done nothing but abound to the good of G. H. A. You remember he pointed out the very serious question of legality of G. H. A. from the fact of its practicing medicine and its being an insurance company. You will remember when Penniman was on the stand I showed you that as early as November, one month after the article was published, they had presented an amendment to their by-laws by which they cured the question of the illegality from the insurance standpoint; and again that they filed an amendment on the second day of May, which was read to you here—and perhaps the significance of which you didn't catch—but which and by which they cured the question of illegality, so that when Justice Bailey had the matter to decide in July it was an entirely different G. H. A.

I told you too, when I started this summation for you, that the beginning of this difficulty could be found in the answer made by Dr. Cabot, and that the answer to the doubts that you might have in you rmind could be found in the answer of the witness presented on the last day. That witness is Dr. Scandiffio himself.

In December 1938 he called on Dr. Wall, his old preceptor and friend, and he spoke to him in the presence of and with Selders and Price; and there he told Dr. Wall on the first occasion that he would like to speak to him again, and Dr. Wall went to Dr. Mallory, the president of the District Medical Society, and he said "Who shall I have from the District Medical Society talk with you?" They said "Dr. Macatee," and there they told him that having become dissatisfied with the work of G. H. A. as Price had, and with the quality of care they were able to give subscribers, they were willing to quit in a body; and if the staff quit that would be the end of G. H. A.

Did the Medical Society ask the staff to quit? There they had a chance not to restrain; they had a chance to crush G. H. A. Did they do it? There is your answer to this charge of conspiracy to restrain. There is your answer to a charge of conspiracy to destroy G. H. A. There is the opportunity presented right in the lap of the District Medical Society to take into its fold the entire staff of G. H. A. and unman the staff, to the destruction of G. H. A. Did they do it, or did they act as they have acted throughout their lives as decent, honorable upright citizens and practitioners of their profession? They said "No," and those men went back to their places. They went back to continue on the work of G. H. A. And just as on the first day you found the reason, on the last day you found the answer to this case; this case which has kept you here for going on nine weeks.

There has been no conspiracy except in the minds of those who would conjure up for some reason, I know not what, this charge to bring defamation and humiliation on these men who have spent their lives trying to do the best they could and now, when they have almost reached the end, they are compelled to face this, an unheard of accusation, under these peculiar and complicated circumstances; and I ask you, as you see them over there, whether or not you have not seen already laid on them the hand of time with an approval for what they have done; with the furrows of time in their cheeks, cut down in there, laborers for you and me. And I ask you that you send them back with a bit of encouragement to their life work to complete it to its end, and that they may not go down under the shadow of convicts for having violated a law of the United States.

Many of the defendants who have been witnesses have been across the water. Some of them are now engaged in the work of building up the national defense. Do you think men of that ilk and stripe would stand here and violate the law, or do you think they worked as they have worked for you, for me, for us all?

And I ask that by your verdict they be found free of this vile, this unnecessary, this sadistic accusation which would crush them to the grave.

(Thereupon a brief, informal five minute recess was had, at the conclusion of which the proceedings were resumed as follows:)

THE COURT:—Are you ready to proceed, Mr. Lewin?

Mr. Lewin:—Yes, your Honor.

CLOSING ARGUMENT ON BEHALF OF THE UNITED STATES

JOHN H. LEWIN

Mr. Lewin:—May it please the Court, and you ladies and gentlemen of the jury: I am sure you will all be glad to hear that I have an hour and seven minutes only, and whether or not I would like to continue on after that makes no difference, because I will have to stop.

Mr. Leahy's argument was just what I expected it to be—very, very able and persuasive indeed, if you happen to be emotional and if you are willing to shut your minds to your narrow task and to the overwhelming evidence that his clients have supplied.

I warned you yesterday about false issues, and I did it because I knew that no lawyer, even as able as Mr. Leahy, could address you and persuade you against the real issue, because of the lack of evidence in the record to talk about, and so he had to talk to you about false issues in the hope that by appealing to those false issues and to your sympathies you would be led away from the main track.

And so, as I told you yesterday, there is an attack on Group Health Association. It is to be outlawed. Why? The only reason you are in the jury box, he says, is because Mr. Penniman and Mr. Zimmerman exercised some lay interference. I took it down verbatim when he said it. Although the boycott against this organization had been planned and nearly perfected for months, day after day, night after night, and meeting after meeting recorded, before there could be any question of lay interference, before the clinic even opened. And that statement to you is hazarded although there is not a scintilla of evidence of any lay interference whatever. There might have been if Dr. Brown had not been cross examined. There might have been a scintilla, because you remember he said what they wanted was a rubber stamp. But on cross examination he stated that there had not been any interference whatsoever between the doctors and the lay board.

Counsel grabs at Dr. Cabot's testimony, and that dear old Nestor of medicine told you frankly that there was a temptation in group practice on a prepayment basis for lay interference. And there is temptation in the hospitals, no doubt. But is it not a far cry from the existence of temptation and any evidence of the fact? You ladies and gentlemen know, from having heard this evidence, that there is nothing in it, not a thing.

Then he sets up some straw men so that he can have the pleasure of knocking them down, and as you see, he ably knocked them down. He insists on the right of the doctors to like and dislike, approve or disapprove, provided, he says, it does not amount to conspiracy. Well, that is the point. When people dislike to such an extent that they take affirmative action and go out and get help not only from their own members, but independent hospitals, and dictate to them under threat of disciplinary action, if you please, as they did with the resolution against the hospitals, even, that is not simply liking or disliking or approving or disapproving. That comes under his qualification, unless it amounts to a restraint of trade and a combination.

Nobody would have been indicted for liking or disliking in this case. The Grand Jury of the United States had the responsibility for indicting and picking out the people they thought, on the evidence before them, were the ringleaders.

Then he even attacks the Government lawyers. Well, maybe we are fair game too. However, we have lived with you now, face to face, for two months, and you ought to have some kind of an appraisal of us.

He says that the only restraint in this case is the restraint that we put on the evidence. Ladies and gentlemen, that comes from a gentleman who had one calendar month to bring in evidence on his defense, if he had any, and he devoted at least three fourths of the time to reauthenticating, reaffirming and rereading to you ladies and gentlemen the very evidence that the Government had introduced.

He says we are attempting to poison your minds, arouse your passions. I disclaim that. I do not want any emotional verdict at all, and I know you do not. I want an honest, sincere verdict on a conviction. If the evidence is not there, there should not be one. If it is there, there should be. Nothing more, nothing less, no matter who are the defendants.

A doctor is not any more above the Federal law than the poor little cigaret vender or orange vender on the street that Mr. Leahy feels offense at because there is some comparison between the two. There is not a bit of difference.

That charge that we are trying to arouse your passion comes from a man who devoted at least 90 per cent of his time here in a most eloquent appeal, practically a confession, and throwing himself on your sympathies.

He pretends that this is a case brought against the medical profession as a whole, and then he proceeds to defend the medical profession as a whole, when it is nothing of the kind. What does his reference mean with regard to the doctors being present when children are born and being in the presence of death? Does that appeal to logic and to the evidence?

What does he mean when he refers to war records, of a war over twenty years old, and participation in national defense? Is that any issue in this case?

Does he claim that the American Medical Association, this powerful corporation that attends at childbirth and deathbeds is not a corporation of the District of Columbia? Does that have any bearing at all?

Then in a most able way he defends the rights of hospitals to decide for themselves who shall be on their courtesy staffs, forgetting that by bringing this case, by shedding the light of day on these tactics, we are vindicating that right that hospitals have in a far more effective way.

We too say, and have said all along, that hospitals not only have the right but the duty to decide these questions independently, on advice as to standards, if you please, and not under pressure.

Then he goes into an elaborate discussion designed to show that the American Medical Association is not opposed to group practice, forgetting, or wanting you to forget, that no contention of the kind has ever been made. The contention is, and it is borne out by the proof, that they have opposed with all their might, group practice on a prepayment basis; and they have a rule, which they enforce, that prevents them from doing anything except to oppose it. And that is the kind of group practice that Group Health Association employs, and that is the kind that the Ross-Loos clinic is, and that Trinity was, and the Milwaukee Center and the Cincinnati attempt, and all the rest. There is unanimous opposition to that kind of group practice, unless the members of the District of Columbia Medical Society themselves, or the A. M. A., operate those plans and come in on that business. They are the ones and the only ones, because their rule which they enforce to govern plans for low-income groups expressly provides it.

And then he attacks the evidence from his own clients in this case. He attacks it, although no witness that he put on the stand had the temerity to attack those contemporaneous records. One man, and one man only, you remember, qualified two little damaging statements, and when he got through with his qualifications he left you exactly where you were when he started to qualify. That was Dr. Macatee. I read it to you yesterday. He attacks that evidence, although those written records, taken down contemporaneously, jibe with every other piece of evidence and check absolutely with the resolutions adopted, and are approved—read and approved in most cases—always approved—by the Society as its minutes, and sometimes when there is an error in them the error is corrected before it is approved.

I may be able to return again to some of those false issues, but I want now to stress a chain of facts, not manufactured by the Government, not what somebody said and may not have meant, although when we put in the evidence of what they said we put in the fact that it was said over and over and over again, with reference to formal resolutions advisedly and carefully adopted by the full society.

And, ladies and gentlemen, when you come to consider your verdict, and consider it on the evidence, please do not forget the words of this resolution which the Grand Jury set out in the indictment and which was passed by the full vote of the Society—not some gossipy, ill advised statement that might be qualified, but a formal document which they all approved:

"WHEREAS, The Medical Society of the District of Columbia has the apparent means of hindering the successful operation of Group Health Association if it can prevent patients or physicians in its employ being received into local private hospitals; and

"WHEREAS, The Medical Society of the District of Columbia has no direct control over the policies of such hospitals as determined by their lay boards of directors except through control of its own boards serving on their medical staffs"—

And another recital to avoid publicity that they are attempting to enforce section 5; and then this:

"*Resolved*, That the Hospital Committee be, and is hereby, directed to give careful study and consideration to all phases of this subject and report back to the Society at the earliest practicable date its recommendations as to the best way of bringing this question"—

That is, Group Health—

"to the attention of the Medical Boards and the boards of directors of the various local hospitals in such a manner as to insure the maximum amount of accomplishment with the minimum amount of friction and conflict."

And the author of that said he wanted that because he did not like the other method of doing the same thing, which was by letter.

Don't forget that Warfield reported, and his report did not go far enough to reach what they wanted to do. Mr. Leahy did not make the correct statement of what this defendant proposed, because he proposed, and it was passed, that it be recommitted to the Hospital Committee and assurances obtained that no member of Group Health Association was on the courtesy staffs of the hospitals. That was their job, the job the Society gave the committee to do—to consider that job when it considered the wording of the hospital resolution of December 1, which starts off—

"As an educational policy we recommend the Mundt Resolution rule"—

which had not been enforced in a single hospital up to that time. It had been on the books of Emergency, but not enforced. It had not been on the books of any other single hospital.

Do not forget the reason for those clever words—"as a matter of educational policy," when the whole point of the resolution was to get this result without bringing down adverse publicity, because the public would not stand for it, and without bringing friction between the Medical Society and the hospitals. No. They wanted them to cooperate. To cooperate in what way? Cooperation is not bad, says Mr. Leahy. Oh, no. But he does not read you the next phrase—"cooperate against Group Health Association." That was the kind of cooperation wanted.

Oh, no; it is not a crime to cooperate, provided, as Mr. Leahy says, that you are not conspiring. But when you are cooperating, knowing that you are furthering a conspiracy—and that is what they intended—that is unlawful.

Bear in mind, ladies and gentlemen, the hospitals are not defendants; and in order for you to decide the issue, the only issue, you do not even have to find that the hospitals made their decision with regard to the Group Health doctors solely because of this pressure. All you have got to find is that these defendants plotted and planned to use this pressure against them.

Let us come to the hospital situation again. But before I do that I want to try to leave with you one of the most salient things.

After they had given the Hospital Committee this job and had it started on its work to obtain assurances that no Group Health doctor could be on the staff, what do you think of this frank confession of a defendant in this case, seriously, man to man and man to woman? Here is Dr. Mattingly:

"I frankly admit the following acts of professional leadership successfully accomplished."

Does he leave an implication there for us to draw some invidious inference from? Leadership? He says, further:

"I personally raised the question and forced the issue of compelling wavering and undecided hospitals to deny courtesy privilege to staff members of G. H. A."

Not poor Dr. Selders who is attacked on the basis of those three gossipy letters, but qualified members of Group Health Association. Remember this, if you will. He is not gossiping, not talking ambiguously about some disreputable government attorney in violation of his professional ethics—I mean, professional moralities—trying to distort its meaning. Can the meaning of this be distorted?

"That the proper agency of the Medical Society be instructed to present at our next stated meeting the facts relating to the present status of Group Health physicians at the various Washington hospitals preliminary to appropriate disciplinary action in event any hospital has ignored the Medical Society's wishes in the premises."

Does this case rest simply on distorting inferences?

And then this (indicating) is the result of that very thing. And won't you remember this—Formal action of the Executive Committee and formal action of the District Medical Society at a meeting in April, when Dr. Woodward was sent here to advise. Mr. Leahy says that all he did was to advise counsel, but he was present and heard this formal action taken. Was this some gossipy letter whose meaning has been distorted?

"The Hospital Committee has purposely avoided the submission of a list of local hospitals for approval of the Medical Society. The eleven local hospitals therefore remain approved by the Medical Society as of Nov. 4, 1936."

Why? The rest of it shows they purposely avoided raising the question of approval again, because they wanted to avoid friction and conflict and yet get the same result. And they remained approved, because they obeyed the behest under the threat of disciplinary action against the independent hospitals that owed a duty to the public:

"To have attempted to reapprove these hospitals last fall or this winter would have detrimentally created conflicts between the Medical Society and some of the local hospitals because of attempted enforcement of the provisions of Chapter IX, Article IV, Section 5 of the constitution of the Medical Society."

Now, this is the way he wrote it first:

"In an effort to hinder the operation of Group Health Association, Inc."

And then he crosses it out and puts in:

"maintain the high standards of practice."

And that is the way it appears in the minutes.

Does that throw any light on why Cutter can use soft words when he enforces the Mundt Resolution and yet get the same results as he would if he had used more drastic action, as he said? Does that throw any light on why the December 1 resolution to enforce the Mundt Resolution started out, "As a matter of educational policy," when what they meant was to "hinder the operation of Group Health Association"? Because that was the authority under which this report was prepared. And then they say "maintain the high standards of practice in the local private hospitals, the Medical Society adopted a resolution on Nov. 3, 1937 directing the Hospital Committee to recommend the best way of bringing the questions involved to the attention of the Medical Boards and boards of directors of the various local hospitals to insure the maximum amount of accomplishment with the minimum amount of friction and conflict. On Dec. 1, 1937 the Hospital Committee submitted a resolution, which was adopted, that the Medical Society recommend to the hospitals that they follow the recommendation of the American Medical Association."

That is Cutter's recommendation, the Mundt Resolution that Cutter was obtaining observance of at this very time, from July 1937 to November 1937:

"namely, that each hospital appointee be a member of his or her local medical society and a member of the American Medical Association."

That was to meet Yater's demand that assurances be given that Group Health Association doctors could not be on the staff. This does it. When Lee and Scandiffio are to be expelled, no member of Group Health Association under that resolution can be a member of the courtesy staff of the hospitals.

Then he recites this resolution that I have just recited to you, offered by Mattingly, who was in the position of professional leadership, to raise again and force the issue of requiring recalcitrant hospitals, under threat of disciplinary action, to go along "in event any hospital had ignored the Medical Society's wishes in the premises."

He strikes that out. This (indicating) is dressed up:

"The Hospital Committee reports that, at this time, the majority of local private hospitals contain in their by-laws a provision that a physician in order to practice in the hospital must be a member or qualified for membership in his or her local medical society.

"Only three of the local hospitals (Columbia, Sibley and George Washington) have not followed this recommendation of the American Medical Association."

And he understated the facts, because Columbia had agreed to observe it and George Washington had agreed to observe it.

"All of the local private hospitals are cooperating fully with the Medical Society"—

And there is where Mr. Leahy stopped and asked you whether there was anything wrong with that, without going on to say—

"cooperating fully with the Medical Society in respect to Group Health Association, Inc. At the present time only one of the local hospitals has on its staff list the name of a physician connected with Group Health Association, Inc. This hospital does not revise its staff list annually, as do the other hospitals, but it has assured the chairman of the Hospital Committee that steps have been taken to deny this physician hospital privileges.

"The Hospital Committee urges that the Medical Society continue their full cooperation and avoid conflict with any of the local private hospitals."

Of course, when they had everything their own way, without conflict by this Hospital Committee and by Cutter's recommendations, why should they head into a conflict and bring about adverse publicity which the Willson resolution wanted them to avoid?

I ask you, ladies and gentlemen, if there is any more powerful evidence that you can imagine on the narrow issue of whether these defendants were planning to restrain Group Health Association, mentioned in these very resolutions, by putting pressure, the threat of disciplinary action, if you please, or cooperation, if you want, on the medical staffs, which are almost entirely composed of their own members—to put pressure on the hospital directors, to prevent not Dr. Selders alone, but all of the G. H. A. staff, whether those doctors on the staff were already members of the courtesy staffs of the hospitals or not?

Let me call to your minds again, so that there will be no mistake, and that this case will not go off on some false issue of what this man Castle writes that some man named Higgins writes that some people around Worcester, unidentified, have whispered about what Dr. Selders' sister said of him—a letter that comes months after they had made their decision at Garfield, and it is based on a recommendation of the Surgical Service and signed by the defendant McGovern, that if they approved this Group Health doctor they would be "aiding and abetting Group Health Association"—and I quote the exact language. Don't let it go off on that issue.

Remember, Dr. Hulburt got the same treatment. His application was tabled at Columbia until he resigned from Group Health, and then he was immediately given privileges; denied the privileges he already had at Georgetown, and as soon as he resigned from Group Health on April 25, he got his privileges in May.

Dr. Price applied to Homeopathic Hospital in the early part of 1938 and never received an answer. Price was admitted to Garfield, not during the period of the indictment, but the medical staff recommended that he be admitted on the day before this indictment comes down, at the end of a long two year period.

Dr. Scandiffio, a member of the staff of Homeopathic Hospital and Sibley Hospital. The superintendent of Homeopathic Hospital said:

"Action awaits the action of the District of Columbia Medical Society."

He was a member of Sibley, and that hospital assured the chairman—and I am not stretching the facts—that "steps will be taken to deny him his privileges there."

Richardson abruptly resigned from Group Health Association, cutting it off from his services on July 15, because he feared the loss of his hospital privileges.

Halstead, applying in August to four or five hospitals, and in October to another one, got no response and no admission.

Sibley Hospital had a list in the admitting office, listing Brown, Wells, Hulburt, Lee and Scandiffio, saying, "These doctors are not to be allowed in at any time."

Am I putting any false construction on the evidence?

And then, even as to Selders—and I am going to say a word for Selders, and I am going to say it from the evidence in this case as I have said everything else; and see what construction you will put on this kind of evidence in the record of Dr. Selders' qualifications as a surgeon.

His reference, Alexander, writes to Casualty Hospital:

"His professional qualifications in surgery are well above the average and ethically and morally he has always been above reproach."

Walter E. Lee writes:

"He completed this basic year (University of Pennsylvania Graduate School) satisfactorily. He then went to Worcester, Massachusetts, and spent a year in clinical training, and I understand his work there was satisfactory to his preceptor."

Would you want any better recommendation than that?

MacIver wrote to Casualty Hospital:

"He participated in the surgical work of the hospital (Worcester City Hospital) considerably and had an opportunity to gain considerable competence."

Then he lists his operations, hundreds of them, and says:

"From the above I think you can conclude that his surgical training is such as to give him competence."

MacIver, again, to Columbia Hospital:

"We find that he was listed to operate on 273 cases, 190 of which may be classed as Major and 83 as Minor. He may have assisted or otherwise participated in considerably more than are shown here. Gynecology is here absorbed in general surgery and one may assume that he had considerable contact, therefore, with gynecological surgery."

Coole, Secretary of the Harris County Medical Society, the society that brought disciplinary proceedings against him because he joined Group Health Association, writes:

"Dr. Selders is a member of this society in good financial standing. His record here is clear and shows that he is academically and professionally well qualified. I have been given to understand that recently

he completed his Master's degree in Surgery at the University of Pennsylvania, which should further qualify him."

And then he concludes, even after that kind of clear statement of his record, and speaking of his connection with Group Health Association—and here is the reason they are opposed to him:

"If the allegations are found to be true, Dr. Selders will be subject to disciplinary action on the part of the Society."

Meaning the Harris County Society.

Eisenman, Superintendent of Garfield Hospital, writing to Surgical Service, pointed out:

"This is not a 'run of mine' case, and your action may be far reaching. Information shows him to have sufficient training for personal recognition, when compared with many now approved for courtesy privileges at Garfield Memorial Hospital."

Better than their own men.

"He is a member in good standing in A. M. A., county and state medical societies in Texas."

And Dr. Henry Rolfe Brown, writing to Penniman, speaks of Selders' general practice, including surgery, in Houston, before he goes West for seven years, and speaks of three hundred and thirty-eight operations which he performed at Worcester Hospital and concludes:

"Dr. Selders is an experienced surgeon and has been in practice for about seven years and is splendidly qualified by his experience as a general surgeon."

Contrast those letters and that record of that absent man with the three letters that they bring against him—Castle's hearsay on hearsay—and I don't take that back for one moment—Berry to Bullard, or Bullock, or whatever his name was, hearsay on hearsay, that gossipy, personality thing, and this man Johnson, who did not know him, but he is sure that he is "likely to get into somebody's hair." Contrast his record as a surgeon, contrast those with the ones I have read to you, which need not be distorted—because I am not that kind of a man; Mr. Leahy seems to think I am. But they do not need to be distorted; they are just as clear as crystal. Contrast those and see whether Selders was turned down on his qualifications. And it doesn't make any difference if he was, as I said yesterday, if he had the qualifications of Sir William Osler, he was face to face with opposition that he could not crack. The stage was set against him by the Mundt Resolution in all these hospitals and by the cooperation that had been obtained under the threat of disciplinary action against the hospitals. Would he have been any more kindly treated than Scandiffio and Hulburt and Richardson and the rest? It is an idle issue, because, when you examine the records of each one of those hospitals—and I was not able to do it yesterday and I will not be able to do it today—you will find that each one of them is opposed to the entire Group Health staff, and each and all of them uniformly are given the same identical treatment.

Can you account for that in any other way than that these defendants, dominating those medical staffs and dominating the chance of those hospitals to be on the registration and on the approved list, exercised that domination as they said they would in order to keep out Group Health Association? Please ask yourselves that question. Along with it, ask yourselves whether I have tortured that written evidence.

Then comes the attack on Mr. Penniman; and this is what the defendants thought of him and of his will to cooperate with them, although when he asked for cooperation they gave him none. When Group Health Association came to them and asked for bread they got a stone, and when they asked for an egg they got a scorpion, because the cards were stacked against them when they came there.

On July 21 the defendants had already learned about Group Health Association, what little they knew about it. All they knew was that it was group practice on a prepayment basis, and that it was unethical and none of the members could have anything to do with it. But he comes there, and you will remember page after page of the record that disclosed how he answered every question propounded to him, and he even told them what was none of their business, and that is that the H. O. L. C. had appropriated a sum of money for two years to help it get started. He even told them that. So he gave them the substance of all of this hullabaloo in regard to the contract, and at the close of the conference this occurred:

"I think that all of us present tonight appreciate just what these gentlemen have done. They have been kind enough, good enough, to come down and meet with us. They have answered all our questions and have not denied us at all, no matter what their own personal feeling may have been concerning some of them."

And then there was a suggestion for another meeting, and that was accepted, although when the defendants' committee came down ostensibly to present some plan of cooperation they had already prejudged the case and decided against them and had withheld information about their so-called principles of medical ethics.

What else do you want to know about Mr. Penniman? You saw him on the stand. There is no evidence against him. There is evidence for him. Dr. McGovern said there was no doubt in his mind that the lay members of the board of directors of Group Health Association "are thoroughly convinced that they are doing a splendid thing for their employees." He was further convinced that they were not doing anything that might be considered unethical by them.

Dr. Macatee urged the Society not to base its opinion on the idea that there are certain scurrilous people who are trying to do a scurrilous thing to the Medical Society and doing it in an underhanded, scheming way.

The counsel for the defendants did not take that good salutary advice. He is willing to plunge out here, without any evidence to support him, and make that kind of a charge.

It was Dr. Macatee's impression, gained from contact with certain individuals, that "they are highly intelligent people who have profoundly studied the subject."

Remember that criticism of poor Mr. Zimmerman, that he went off half cocked and did not take any advice. Do you remember Dr. Cabot's saying that the proper place to get advice on the business side was from a business man, and on the medical side it was from doctors? And do you remember that Zimmerman went to Stanocola and read up on the subject, for his business side, and that he went to the Surgeon General and to Colonel Jones and to Dr. Brown, and to that grand old man, Dr. Cabot, just about the time the clinic opened, for advice on the medical side:

"These people are aware of all the social currents flowing through the country with respect to the relation of the medical profession and the people. They are aware what has been done elsewhere, and the result. My feeling is that it is a group of earnest, rather public-spirited people who are undertaking to do something for the benefit of their associates. They are convinced they have secured what they call competent legal advice, that they are on secure legal ground. They have, by reason of their knowledge of similar projects elsewhere, become convinced that where such organizations spring up they almost constantly receive the antagonism and the animosity of the local medical profession."

Does this begin to account in your minds for why they did not care to hand over their private contracts with the knowledge that Macatee attributes to them? It was Macatee's opinion that their desire to avoid publicity in this matter was due to their knowledge of that fact.

They had knowledge of Ross-Loos and of Milwaukee and of Chicago Medical Center, and Trinity; they had the report back from Jones that the Medical Society would kick out—I use Jones's very words from the witness stand—would kick out of the Society anybody who joined; and they had Mr. Zimmerman's talk with Woodward, who said, according to Mr. Zimmerman, that when the A. M. A. met at Atlantic City it would be the end of Group Health Association. It was a wonder that it was not. Do you agree with Macatee that there might have been some reason why they did not want to hand out the contract? They were regarded as outlaws, and plottings and plannings went on against them at some sixty or seventy meetings, mainly concerned with how they could best oppress Group Health Association. There is page after page after page in the record of plottings on these economic questions. Have you any doubt as to the real reason for this opposition? Their principles of so-called medical ethics? Not what was said on the stand—conduct becoming a gentleman, the Golden Rule and the Ten Commandments. The witness was not thinking of the Ten Commandments Mr. Leahy is thinking about. He was thinking about the Ten Commandments that were inscribed by Moses on the tablets.

Can you find anything about Group Health, its plans, its standards, its activities, its personnel, the way it approached its problems, that by any stretch of the imagination could be unethical in any sense such as the witness described?

What they meant was this. They meant these economic rules, preserving free choice, so that all the doctors in the local medical societies could get in on this plan. Otherwise they were unethical.

Against public policy? They would brand as immoral or as unmoral any plan that would seem to cut in on their purse. What did they mean by "public policy"? You remember the article that was written. It was not just a gossipy article:

"The effect of the withdrawal from private practice of even one half that number of persons, all of whom are able to pay for service, would materially diminish the incomes of physicians in private practice in the District of Columbia."

And that is stricken out, and this innocuous phrase is used: "against public interest."

That is written in instead.

There is a frank definition of what "public policy" means. And yet it goes down in the article as simply a statement that it is against the public interest, and you are to be led to believe that it is really unethical in the moral sense.

But the frankest people on this subject of the true motive and reason behind this oppression are West, Yater and McGovern.

Counsel for the defendants says Government counsel accused these fine professional men of cheap commercialism. I deny it. They have accused themselves. All I have done is to present the humble message of what they said, to you ladies and gentlemen of the jury.

Woodward writing to Neill says that he sent this article down to Virginia and Maryland suggesting that there is something for them to do, and he says that the members of the Medical Societies in the counties immediately adjacent to Washington have an active personal interest in the matter that physicians in Maryland and Virginia, in the more remote parts of the states, have not.

What is that interest that people in nearby territory have? On the subject of morals? Not at all. On the subject of finances? Oh, yes. Yater says that a system of prepayment immediately fixes medical fee schedules at a reduced scale and to adjust them would be well nigh impossible.

Are they talking about morals, the ten commandments and the Golden Rule? McGovern frankly said that he looked on Group Health Association movement as an organization coming in and interfering with his business. He said he expected to be in practice for some twenty years, and he did not propose, if it could be avoided at all, to have an organization such as was proposed interfere with his work and income.

Have I distorted anything in charging them with cheap commercialism, when I have shown you that there was no moral ground for this opposition, and when I have quoted verbatim from what they said themselves about their purposes?

And so, ladies and gentlemen, let me leave this case with you, with the hope that you will recall, not these side issues, and without emotional feeling, but just quietly and intellectually recall, on the subject of consultation boycott, the instructions that Neill gave to Thomas Lee that he could not meet him in consultation, notwithstanding the ethics of the A. M. A., because he was a member of Group Health Association's staff.

Remember, on the subject of the staff boycott, the fact that good old Dr. Lee subjected himself to a hearing, charged even after he had resigned, and then induced to resign the very night of the second hearing.

And, ladies and gentlemen, remember, if you remember nothing else on the hospital boycott, how it was pointed out in June and July that members of Group Health could not be put on the courtesy list of hospitals without their connection with Group Health being mentioned; in fact, that it would have to be camouflaged to the nth degree.

And then remember, if you will, this resolution to hinder, not the unsuccessful operation of Group Health Association, but the successful operation of it, which is the only kind of operation that would really cut in on them, if they could prevent them from being received in the local private hospitals; and remember the chain of facts and circumstances that stand uncontradicted, of what they did pursuant to that solemn requirement, and the result which they achieved where they cooperated a hundred per cent successfully.

THE COURT:—Members of the jury, it is too late to submit the case to you today, because necessarily it will take some time to instruct you concerning the law, and in view of the long day which you have had in listening to the arguments of counsel I will postpone it until tomorrow. I know that it is unnecessary to repeat my admonitions to you. I know by your demeanor throughout the case that you have them firmly in your minds. But now, after the arguments and before you finally get together in your deliberations and before you hear the statements of the Court concerning the law, I think it is well to warn you against reaching conclusions until you understand the law of the case, until you are able to sit together and discuss and consider the issues. So, for the present, just keep the matter in abeyance and wait until tomorrow until you leave the court room to consider of your verdict.

You may be excused until tomorrow morning at 10 o'clock.

(Whereupon, at 3:35 p. m. the Court adjourned until tomorrow, Friday, April 4, 1941, at 10 a. m.)

[This completes the proceedings of the trial. The charge to the jury by associate Justice James M. Proctor was published in THE JOURNAL, April 12, p. 1700.]

MEDICAL ECONOMIC ABSTRACTS

CALIFORNIA PHYSICIANS' SERVICE

The report of the first year and a half of operation of the California Physicians' Service ended Dec. 31, 1940 shows that growth in membership has been slower than anticipated. The service has to be sold, which requires time and effort. The contracts are made with groups, a process which often requires long negotiations. At the time the report was issued the membership was somewhat in excess of twenty thousand. This slow growth is not considered wholly undesirable. Many problems have been uncovered in the course of operation, and experiment is less costly with a small than with a large membership. The growth of professional membership has been fairly steady and amounted to five thousand three hundred and eight physicians who had accepted the conditions of practice under the plan at the time the report was issued.

There was considerable expense involved in the organization. This meant that there was a deficit which was replaced from professional membership registration fees and from loans from the California Medical Association. Not until November 1940 did the income meet the costs of administration and the payment of medical fees. A total of $62,897.55 was taken from the fund provided by the California Medical Association and the registration fees from physicians. The receipts from beneficiary members did not exceed $10,000 in any one month until January 1940, but it had reached more than $35,000 at the close of that year.

Payments to physicians are made on the "unit system," and since June 1940 the value of the unit has become $1.35. It is realized that this does not represent an adequate payment of physicians, but up to the present the amount of work done by each doctor has not been enough so that this low unit value seriously affects his income. The trustees suggest the following measures governing future operation:

1. In order to secure promptly a sufficient volume of membership to carry overhead, required percentage of participation was established at 40 per cent (for the larger groups). It is well known that, the higher the percentage obtained in any group, the more satisfactory the experience. This percentage is being and will be further increased.

2. For the same reason, the first and easiest groups to be obtained were taken. This has resulted in an unsatisfactory percentage of women. Our enrolment force is now concentrating effort on securing more industrial groups.

3. Medical direction has had to be learned from experience, which has proved expensive to the fund in many instances. This department is now functioning with much greater smoothness than at first and with correspondingly fewer "leaks."

4. Overhead is just under 25 per cent. With steadily increasing membership, this will be reduced. There is no reason to doubt that we can eventually reach an overhead of 10 to 15 per cent. This will automatically increase the unit value. We have passed the experimental stage, to a large extent, with

respect to administrative methods, development of office routines and procedures, and this will contribute too to the lessening of the percentage of revenue required for administration.

5. It is the experience of other service organizations that each new group contracted is more expensive to serve during the first year or two of membership than thereafter. There is every reason to believe that our experience will be similar.

The suggestion is also offered that the example of the Michigan Medical Service be followed and a new type of contract with limited provisions should be offered in order to increase the membership in the lowest income group. Such a contract might cover the professional services of a surgical operation and certain injuries together with hospitalization.

COOPERATIVE PROGRAM IN SCHOOL HEALTH

The first step in a cooperative program in school health care of the St. Louis County Health Department with the Medical Society of St. Louis County was to change a "physical examination" previously conducted largely by lay workers at the school to a "medical examination" conducted by family physicians in their offices. The stereotyped school examination conducted previous to 1937 resulted in the correction of only 3 or 4 per cent of the defects. When the same examination was repeated in successive grades, it was found that about 95 per cent of the old defects still existed, plus some new ones. When the medical examination was transferred to the family physician's office and the presence of the parents was required, corrective treatment followed in a much larger percentage of the cases. In 1939, 91 per cent of the parents accompanied their children to the physician's office.

One hundred and forty-three physicians made these examinations without charge. Parents who were able paid the physician for corrective treatment; those unable to pay could be referred by the physician to the health department, which arranged with the county hospital for necessary care. Medical participation of the family physician in the local health program is extended to contagious disease, tuberculosis, venereal disease and particularly to maternity hygiene. In 1938 and 1939, one thousand two hundred and eighteen deliveries were made without a single maternal death.

OHIO ENABLING ACT FOR MEDICAL SERVICE PLANS

The enabling act sponsored by the Ohio State Medical Association (House Bill 51) to prepare the way for establishment of a plan endorsed at the recent meeting of the house of delegates of that association has now became a law.

Any corporation "desiring to establish, maintain and operate a medical care plan must obtain from the superintendent of insurance a certificate of authority or license to do so." Each such application must contain a full description of the proposed medical care plan and also evidence "that the medical care plan which the corporation proposes to operate, the articles of incorporation and any amendments thereto, and the regulations and by-laws of such corporation have each been approved by the established medical association, society or academy of each county lying wholly or partly within the territorial boundaries described in the articles of incorporation or any amendments thereto. The term 'established medical association, society or academy,' as used herein, means the medical association, society or academy maintained in the county by a majority of the duly licensed physicians and surgeons residing therein."

This appears to permit the establishment of county plans rather than a single statewide plan. No certificate is to be issued unless written agreement to enter the plan has been obtained from at least one physician for each five hundred subscribers. It is also provided that "the relationship between a duly licensed physician and surgeon rendering professional services under such plan and such subscriber shall constitute the ordinary relationship of physician and patient; and no action based upon or arising out of such relationship shall be maintained against a corporation operating a medical care plan in compliance with the provisions of this act."

The enabling act does not enter into any further details of the type of organization that shall be formed, but the state medical association has developed a rather complete outline of those that it will approve.

TEXAS MEDICAL SERVICE PLAN

An enabling act which the House of Delegates of the State Medical Association of Texas directed its legislative committee to prepare has been introduced into both the House and the Senate of the Texas state legislature. The proposed bill does not set up a fixed plan but rather establishes certain principles and boundary lines for the guidance of county medical societies. It is believed that this law will enable any county society to bring about an organization of physicians to provide medical service for certain income groups on a monthly prepayment basis without disturbing the personal relationship of physicians and patients. No third party will be brought into the picture except for the purpose of distributing money collected on a prepayment basis. The organization will not be under obligation to furnish medical service for anybody. It merely promises to pay the doctor whom the participating patient employs his proportionate share of the money collected for that purpose.

The plan has been in operation on an experimental basis in Dallas County since July 1, 1940, when a charter was obtained from the state department of insurance to operate a plan on a nonprofit basis. The Ford Motor Company with one thousand employees expressed a desire to join in the experiment, and according to the Dallas Morning *News*, over six hundred of these employees were enrolled at a cost basis of $1.50 a month. This covered sickness or accident with medical services paid for whether in the doctor's office, the patient's home or the hospital. For 50 cents additional, each employee was given a policy by Group Hospital Service which allowed him the services of any hospital he preferred when such need arose.

After six months of operation under the plan, all parties concerned are greatly pleased. The required 60 per cent (six hundred and thirty-four employees) enrolled at first has voluntarily grown to practically 100 per cent, or one thousand, one hundred and thirty-four employees. Approximately 10 per cent have had medical or surgical service. Of this number 12 per cent have had surgical care in the hospitals and the remainder, or 88 per cent, have required medical care outside the hospitals, in the home or office. During the first six months of operation of the plan only forty-four of ninety-six men who have received service lost time from work. There was a decrease of 85 per cent in time lost through sickness over the six months prior

to the plan, and time lost from work on account of sickness has decreased 92 per cent.

Dallas physicians have cooperated wholeheartedly with the plan. There are five hundred and twelve members of the Dallas County Medical Society, and four hundred and eleven of these are registered with the plan. There have been numerous requests from other groups desirous of being enrolled under the plan, and requests have come in from many cities of Texas for information concerning its workings.

The bill that has now been introduced into the legislature will permit the plan to be extended to other counties throughout Texas.

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Change in Status.—H. R. 4545 has passed the House, authorizing an appropriation of $150,000,000 for the construction and operation of necessary community facilities in connection with national defense activities. Under the provisions of the bill the Federal Works Administrator, with the approval of the President, may, among other things, (1) maintain and operate public works and (2) make loans or grants, or both, to public and private agencies for public works and equipment thereof, and make contributions to public or private agencies for the maintenance and operation of public works. The term "public works" is defined to mean any facility useful or necessary for carrying on community life, including schools, waterworks, works for the treatment and purification of water, sewers, sewage, garbage and refuse disposal facilities, public sanitary facilities, "hospitals and other places for the care of the sick," recreational facilities and streets and access roads.

Bill Introduced.—S. 1459, introduced by Senator Reynolds, North Carolina, proposes to establish a Chiropody Corps in the Medical Corps of the Army. Appointments in the Chiropody Corps will be in the grade of first lieutenant originally, and officers of the corps are to be promoted to the grade of captain after three years' service, to the grade of major after twelve years' service, to the grade of lieutenant colonel after twenty years' service and to the grade of colonel after twenty-six years' service. The bill also proposes to establish within the Medical Corps a Chiropody Reserve Corps.

STATE MEDICAL LEGISLATION

Florida

Bills Introduced.—S. 412 proposes to condition the issue of a license to marry on the presentation by each party to the proposed marriage of a certificate of a licensed physician that (1) the party is not epileptic, insane or feebleminded and is free of pulmonary tuberculosis in a communicable stage and (2) the physician has obtained a smear and specimen of blood from the party, which he has submitted to the Florida State Board of Health and that the state board of health has reported to the physician that the smear and specimen submitted to it indicates that the party is free from any communicable venereal disease. H. 599 proposes to authorize the Board of County Commissioners of Baker County to levy on taxable property in the county an annual tax in addition to all other taxes not to exceed 2 mills annually, to be used and disbursed by the board of county commissioners to care for indigent inhabitants of the county who are in need of hospitalization and medical care.

Bills Passed.—S. 341 passed the senate, May 5, proposing to require every physician attending a pregnant woman for conditions relating to pregnancy to take or cause to be taken a sample of her blood at the time of the first examination and to submit the sample to an approved laboratory for a standard serologic test for syphilis. S. 360 passed the senate, May 6, proposing to authorize the city of Tallahassee to establish and operate a public municipal hospital and to issue its certificates of indebtedness in such amount not greater than $400,000 as is necessary to establish and equip the hospital.

Missouri

Bill Introduced.—H. Res. 125 proposes to create a committee to investigate certain abuses alleged to result from the administration of the workmen's compensation act "in that many and sundry insurance companies have a working alliance with several doctors, especially so in the larger industrial areas where a small clique of said doctors now exist." This resolution apparently stems from a recommendation adopted at the last convention of the Missouri State Medical Association that the state workmen's compensation act be amended because "It is not an established fact that the employee has the advantage of an unbiased opinion on the witness stand by a physician who is being used repeatedly and paid by the insurance companies" and because a physician selected by the insurance company is not always the most competent in his community.

Pennsylvania

Bill Introduced.—H. Res. 89 authorizes the speaker to appoint a committee of five members of the house to investigate the maintenance, operation and conduct of all state hospitals.

OFFICIAL NOTES

THE CLEVELAND SESSION

Reservations at Cleveland

Because of the large demand for hotel accommodations during the time of the annual session of the American Medical Association there are few such accommodations left. The Allerton Hotel has completed arrangements to have the Cruise Liner *Seeandbee* lie in dock at the foot of East Ninth Street, just one and one-half blocks from the Cleveland Public Auditorium, during the week of the session beginning at 7 a. m. Monday, June 2, and ending at 6 p. m. Friday, June 6.

Accommodations on the boat and rates are as follows:

A. Inside cabin, running water, 2 berths, $4.25 a day per cabin.
B. Outside cabin, running water, 2 berths, $4.75 a day per cabin.
C. Outside cabin, private toilet, 2 berths, $5.75 a day per cabin.
D. Outside parlors, double bed, bath, $10 a day per parlor.
E. Outside parlors, twin beds, couch, bath, $12 a day per parlor.
F. Outside parlors, twin beds, couch, bath, private deck, $15 a day per parlor.

For single occupancy of cabins there will be $1 reduction on the daily cabin rate. All reservations will be accepted as double accommodations unless otherwise specified. A "Continental Breakfast" every morning is served to guests without charge. Those desiring to take advantage of accommodations on the *Seeandbee* during the week of the session are requested to write to Dr. Edward F. Kieger, 1604 Terminal Tower, Cleveland, Ohio, indicating the kind of accommodations desired, the date of arrival and the names of all those who will accompany them.

RADIO BROADCASTS

The last three programs to be broadcast in the series "Doctors At Work" are as follows:

May 21. Physician to the Community.
May 28. Doctors' Hobbies and The Doctor as a Citizen.
June 4. A. M. A. Convention.

The program is scheduled over the Blue Network of the National Broadcasting Company Wednesdays at 10:30 p. m. eastern daylight saving (9:30 eastern standard) time (9:30 Chicago daylight saving, 8:30 central standard, 7:30 mountain standard, 6:30 Pacific standard time).

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Annual Clinical Meeting at Tuskegee Institute.—The thirtieth annual clinic and twenty-fourth annual meeting of the John A. Andrew Clinical Society was held at the John A. Andrew Memorial Hospital, Tuskegee Institute, April 6-12. Guest clinicians were Drs. Edward V. L. Brown and Dallas B. Phemister, professors of ophthalmology and surgery, respectively, Department of Medicine, University of Chicago.

Mental Hygiene Program.—Dr. Archibald M. Gaulocher, Wingdale, N. Y., has been added to the staff of the state department of health as associate in charge of the division of mental hygiene. He will cooperate with county medical societies and other groups in the operation of mental hygiene programs in various parts of the state. Dr. Gaulocher graduated at Columbia University College of Physicians and Surgeons, New York, in 1929. He resigned from the Central Islip State Hospital, New York, after serving on the staff for eleven years to join the Alabama department of health.

Correction—Change in Health Officers.—Dr. Isee L. Connell, Birmingham, was recently appointed health officer of Clarke County. This notice was erroneously placed under Mississippi news in THE JOURNAL, May 10, page 2205.

CALIFORNIA

Laboratory Technicians Wanted. — Bacteriology graduates with at least six months' recent technical experience in a recognized public health laboratory are eligible to participate in a civil service examination just announced by the Los Angeles County Civil Service Commission. Applications must be filed by Wednesday May 21 to be considered for the examination. Beginning salary for the positions is $155 a month. All candidates must possess a California State Public Health Laboratory Technician's Certificate. Additional information can be secured from Room 102, County Hall of Records, Los Angeles.

Society News.—Dr. Morris Fishbein, Editor of THE JOURNAL, Chicago, addressed the Alameda County Medical Association, Oakland, April 21.——Prof. Henrik Dam, Biochemical Institute, University of Copenhagen, recently discussed "Vitamin K—Its Role in Human Pathology and Its Application in Therapeutics" before the Los Angeles Academy of Medicine, successor to the Los Angeles Clinical and Pathological Society.——Dr. Clifford J. Barborka, Chicago, addressed the First District Dental Society in Hollywood, March 21, on nutrition.——A joint meeting of the Los Angeles Cancer Society and the Symposium Society was addressed in Los Angeles, March 26, by Dr. Frederick J. Taussig, St. Louis, on "Iliac Lymphadenectomy for Cervical Cancer."——Dr. Lewis A. Alesen, Los Angeles, discussed "Lesions of the Common Duct" before the San Diego County Medical Society, April 8, in San Diego.

The Langley Porter Clinic.—The cornerstone for a new clinic on the campus of the University of California Medical School, San Francisco, was laid April 5. The clinic, which will cost $500,000, will be a neuropsychiatric unit of the state department of institutions and will be under the direction of the medical school. It will be named in honor of Dr. Langley Porter, dean emeritus and professor of medicine and lecturer in medical history and bibliography, emeritus, of the medical school. Dr. Aaron J. Rosanoff, director of state institutions, was master of ceremonies. The speakers included Robert Gordon Sproul, Litt.D., president of the University of California, and Dr. Porter. The clinic will have about one hundred beds and an outpatient department and will be used for the care, study and treatment of acute psychiatric cases.

DISTRICT OF COLUMBIA

Psittacosis in Washington.—Psittacosis was reported in an employee in the birdhouse of the National Zoological Park in Washington, according to *Public Health Reports*, April 18. The onset of the disease was noted April 7.

Chicago Physician Named Dean of Howard.—Dr. John W. Lawlah, Chicago, has been appointed dean of Howard University School of Medicine, Washington, to succeed the late Dr. Numa P. G. Adams. Dr. Lawlah graduated at Rush Medical College, Chicago, in 1932.

Air Survey to Determine Geographic Increase in Population. — Officials of Health Security Administration, sponsored by the Medical Society of the District of Columbia, recently made an air survey of Washington and adjacent areas in Maryland and Virginia to determine in which direction geographically the population is increasing, with the consideration that population trends are an important factor in choosing cities for new hospital facilities. Following presentation of the data collected, a resolution was passed providing for a comprehensive survey of the situation. The master plan would stem from three bases, the first to develop from study of the need of hospitalization. The second base has to do with the existing hospital and allied facilities to meet the needs, while the third base covers financial resources.

Borden Award to Chemist.—Claude S. Hudson, Ph.D., director of the division of chemistry, National Institute of Health, U. S. Public Health Service, Washington, was presented with the Borden Company Award at the meeting of the American Chemical Society in St. Louis, April 7. The award of $1,000 was established in 1938 to stimulate fundamental research in the chemistry of milk in the United States. Dr. Hudson's address before the chemical society was entitled "Milk Sugar," a subject in which he has been doing research for many years. Dr. Hudson received his doctorate in 1907 at Princeton University. He was with the U. S. Department of Agriculture from 1908 to 1919 and with the Bureau of Standards from 1923 to 1928, when he became director of the division of chemistry of the National Institute of Health.

Campaign Against Venereal Diseases. — Newspapers reported, April 3, that a vigorous program to control venereal diseases would be carried out in the District of Columbia and nearby Virginia and Maryland as well as in neighboring army and navy detachments. Dr. George M. Leiby, director of the bureau of venereal diseases of the District health department, stated, according to the report, that almost nine out of every hundred District selectees were found to be afflicted with syphilis, indicating that ten thousand residents between the ages of 20 and 30 are affected with the disease. The drive will be financed by defense appropriations. Among the initial group whose "contacts" will be tested are eight hundred persons discovered in selective service examinations and one hundred and fifty persons who were found to have the disease when they volunteered as blood donors. Prophylactic stations will be set up in the District as one control measure, it was stated.

GEORGIA

Lectures by Dr. Karsner.—Dr. Howard T. Karsner, professor of pathology, Western Reserve University School of Medicine, Cleveland, lectured in Atlanta recently under the auspices of the Atlanta Clinical Society. His subjects were "Ovarian Tumor with Endocrine Dysfunction," "Hypertension" and "Paget's Disease of the Nipple."

Doctors' Day.—The Atlanta *Constitution* published a special supplement Sunday March 30 in tribute to the observance of Doctors' Day. The eight page supplement was compiled under the auspices of the woman's auxiliary to the Fulton County Medical Society in honor of the society's members. The auxiliary was assisted by the committee on public health and instruction and the committee on public policy and legislation of the society.

Changes in Health Officers.—Dr. Jewel G. Gainey, formerly of Blountstown, Fla., has been named assistant commissioner of health of Muscogee County with offices in Columbus, and Dr. Charles W. Harwell, health commissioner of Crisp County, Cordele. Dr. John R. Cain has been placed in charge of the health unit in Greene County, with headquarters in Greensboro. For the past two years Dr. Cain has been director of the division of industrial hygiene of the Alabama State Department of Health, Montgomery.

Foundation Donates Surgical Wing. — The Joseph B. Whitehead Foundation has made available to the Emory University School of Medicine, Atlanta, a gift of $550,000 to construct and equip a surgical building. The new six story structure, to be named the Conkey Pate Whitehead Pavilion, will be erected as a wing to the present university hospital and will have five major and five minor operating rooms, roentgen ray facilities, rooms for sixty surgical patients and administrative offices of the medical school. The entrance wing will become the main entrance to the hospital. Dr. Daniel C. Elkin, who occupies the Joseph B. Whitehead chair of surgery, is head of the department of surgery.

ILLINOIS

Outbreak of Dysentery. — About 100 cases of dysentery occurred among the 2,285 residents of Carrollton, the state department of health reported, April 26. Since the department of health reported to local authorities on Aug. 31, 1939 that the local water supply could not be considered safe against possible pollution, the possibility that the outbreak may have been water borne is being investigated. The public water supply at Carrollton is drawn from a limestone spring and is treated only by chlorination. Preliminary tests showed that the drinking water in the week preceding this report did not conform to the drinking water standards of the public health service.

Chicago

Veteran Pharmacist Retires. — Mr. William Gray has retired as head pharmacist at Presbyterian Hospital after thirty-five years' service in that position. He has been succeeded by Malcolm Hutton, who had been assistant pharmacist for twenty-six years. The new assistant pharmacist is Franklin B. West, Belvidere, Ill.

Society News.—The council of the Chicago Medical Society and the council of the Illinois State Medical Society have voted to waive the 1941 dues of members inducted into military training and removed to training camps by the draft, by the National Guard or by virtue of being in the reserve. Any member who forwards a copy of his call to service to the secretary will immediately receive a 1941 membership card. In the event that the dues have already been paid they will be refunded. —— The Chicago Ophthalmological Society was addressed, April 21, by Drs. M. Herbert Barker on "Hypertension, with Special Reference to the Renal and Ocular Vessels" and Philip M. J. Corboy, "A Corneoscleral Union for Cataract Operations." —— Dr. Samuel M. Feinberg discussed "Drug Allergy: Clinical and Immunologic Considerations" before the Chicago Society of Allergy, April 21.

Surgical Award Announced.—The third annual award of the Chicago Surgical Society was presented at a meeting of the society, May 2, to Dr. Joseph Garrott Allen, research assistant in surgery, University of Chicago Clinics, for his paper entitled "Some Aspects Concerning the Physiology of Prothrombin and Vitamin K." Dr. Allen graduated at Harvard Medical School, Boston, in 1938. The annual prize of $250 is offered to some young man in Chicago, who is not a member of the Chicago Surgical Society, for meritorious work in one or both of the fields of experimental and clinical surgery. Competitive papers for the 1942 award should be submitted on or before March 1, 1942 to the secretary of the society, without identification marks, accompanied by a sealed envelop bearing on its outside the title of the paper and containing within the name and address of the author. The secretary is Dr. Michael L. Mason, 54 East Erie Street.

INDIANA

Tuberculosis Meeting.—The Indiana Tuberculosis Association held its annual meeting at the Lincoln Hotel, Indianapolis, April 15. The speakers included Drs. Esmond R. Long, Philadelphia, on "Military Service and the Anti-Tuberculosis Campaign"; Henry Kennon Dunham, Cincinnati, "Guiding Epidemiological Principles for Tuberculosis Programs"; Horace M. Banks, Indianapolis, "Pathologic Aspects of the Lung," and Paul M. Harmon, Ph.D., Bloomington, "Physiologic Aspects of the Lung."

Society News.—The Indianapolis Medical Society devoted its meeting, April 15, to a discussion of chemotherapy as applied to pediatrics with the following speakers: Drs. Matthew Winters, Louis H. Segar, Lyman T. Meiks and Gerald F. Kempf.——Dr. Clyde G. Culbertson, Indianapolis, addressed the Northeastern Indiana Academy of Medicine, April 24, in Garrett on "How the Clinical Laboratory Can Help the General Practitioner." —— Dr. David A. Boyd Jr., Indianapolis, discussed "Psychologic Trends in Modern Books and Literature" at an open meeting of the Madison County Medical Society, April 21.——Dr. Byrl R. Kirklin, Rochester, Minn., spoke on "Lesions of the Small Bowel" before the Muncie Academy of Medicine, April 8.——The LaPorte County Medical Society was addressed in LaPorte, April 17, by Dr. Raymond W. McNealy, Chicago, on "Management of Gallbladder Disease." —— At a meeting of the Gibson County Medical Society in Princeton, April 14, Dr. Garold V. Stryker, St. Louis, spoke on common skin diseases.

IOWA

Annual Renewal Fees Due Before June 1.—All licenses to practice medicine and surgery in Iowa expire annually on June 30. To renew such a license a licentiate must make a written application to the state department of health before June 1, enclosing the renewal fee of $1. If a license expires by reason of the licentiate's failure to renew it, it can be reinstated without reexamination only on the recommendation of the state department of health and on the payment of the overdue fees.

First Aid Course.—The Fremont County Medical Society, the Sidney Legion Post, the Fremont chapter of the American Red Cross and Fred H. Hill, editor of the Hamburg *Reporter*, sponsored a fifteen week course in first aid and accident prevention recently. Sixty-eight persons received certificates on satisfactory completion of the course, including students, an oil station employee, a school bus driver, a city fireman, telephone company workers, a rural mail carrier, a farmer, foreman, timekeepers and laborers. This was the third such course in Fremont County.

Symposium on Virus Disease.—The Iowa State Medical Society and the Iowa Academy of Science presented the second of their joint symposiums at Simpson College, Indianola, April 25, on virus disease. The speakers were Carl G. Vinson, Ph.D., professor of horticulture, University of Missouri, Columbia, on "The Chemistry of Viruses"; Dr. William M. Hale, professor of bacteriology, State University of Iowa College of Medicine, Iowa City, "Virus Diseases of the Respiratory Tract," and Chester D. Lee, M.S., of the veterinary division of Iowa State College, Ames, "Virus Disease in Animals."

KENTUCKY

Hospital News. — The name of the Danville and Boyle County Hospital, Danville, has been changed to the Ephraim McDowell Hospital in honor of the famous Danville surgeon who performed the first ovariotomy.

Postgraduate Course in Pediatrics.—A course of postgraduate instruction in pediatrics is in progress at the Children's Free Hospital, Louisville, Wednesday mornings from April 23 to June 25. The courses consist of discussion of interesting cases in the hospital, lectures and demonstrations by the staff of the hospital.

Society News.—Dr. Frederick H. Falls, Chicago, addressed the Jefferson County Medical Society, Louisville, March 17, on "Toxemias of Late Pregnancy," under the auspices of the Louisville Obstetrical and Gynecological Society. Drs. Leo W. Zimmerman and Richard Douglas Sanders addressed the society, April 21, on "Clinical Considerations of the Climacterium" and "Carbon Monoxide Asphyxia" respectively. —— Dr. Edgar F. Kiser, Indianapolis, addressed the Louisville Medico-Chirurgical Society, April 25, on "Some Early American Medical Publications."

LOUISIANA

State Medical Meeting and Election.—Dr. Emmett L. Irwin, New Orleans, was chosen president-elect of the Louisiana State Medical Society at its annual meeting in Shreveport in April, and Dr. Paul King Rand, Alexandria, was inducted into the presidency. Vice presidents elected were Drs. Robert T. Lucas, Shreveport; Henry B. Alsobrook and Robert F. Sharp, New Orleans. The 1942 meeting will be in New Orleans. This meeting of the state society was dedicated to Dr. Frederick J. Mayer, Opelousas, who has been practicing in Louisiana since his graduation at Tulane University School of Medicine, New Orleans, in 1883. Dr. Mayer served as president of the Attakapas Medical Society, the oldest medical society in the state, in 1885 and as president of the Louisiana State Medical Society, 1913-1914. Among the out of state speakers were:

Dr. Ernest H. Gaither, Baltimore, Important Clinical Considerations of Gallbladder Disease.

Dr. Harvey G. Beck, Baltimore, A Study of the Effects of Combustion Products of Natural Gas on Public Health.

Dr. John D. Camp, Rochester, Minn., Osteoporosis and Its Significance in Relation to Systemic Disease.

Dr. Virgil S. Counseller, Rochester, Minn., A Consideration of the Fascia of Broad Ligament with Respect to Certain Surgical Procedures on the Pelvis.

Dr. Brian B. Blades, St. Louis, Surgical Treatment of Bronchiectasis.

Dr. Holman Taylor, Fort Worth, Texas, delivered the annual oration of the society.

MASSACHUSETTS

Society News.—Dr. Arthur P. Stout, New York, discussed "Tumors of the Peripheral Nerves" before the New England Pathological Society, April 17.——Dr. Harold J. Harris, Westport, N. Y., discussed brucellosis before the Worcester District Medical Society, April 9, in Worcester.

Personal.—Dr. Merrill Moore has been appointed medical director of the Washingtonian Hospital, Boston.——Dr. Bardwell H. Flower, formerly of Boston, has been appointed superintendent of Worcester State Hospital, Worcester, to succeed Dr. William A. Bryan, who last year became superintendent of Norwich State Hospital, Norwich, Conn.——Dr. Benjamin W. Mandelstam, Bridgewater, has been appointed medical adviser to the Massachusetts Department of Public Welfare, serving in all departments relating to medical care.

Dr. Cannon Receives Friedenwald Medal.—Dr. Walter B. Cannon, George Higginson professor and head of the department of physiology, Harvard Medical School, Boston, is the first recipient of the Friedenwald Medal of the American Gastro-Enterological Association. The medal was presented during the annual meeting in Atlantic City, May 5-6, according to *Science*. Dr. Cannon received the award "in recognition of his pioneer utilization of the x-rays in gastroenterology, and his important contributions to the mechanics of digestion, to the elucidation of the sensations of hunger and thirst, and to the development of the science and practice of gastroenterology." Born in Prairie du Chien, Wis., in 1871, Dr. Cannon graduated at Harvard in 1900 and has held his present professorship since 1906.

MICHIGAN

Nursing School Becomes University Body.—The University Hospital Nursing School, Ann Arbor, established fifty years ago, has been separated from the hospital administration and set up as the University of Michigan School of Nursing with its own governing body, newspapers announced on April 13. The director of the school, Miss Rhoda F. Rettig, was named professor of nursing.

Highland Park Spring Clinic.—The second annual spring clinic of the Highland Park Physicians' Club was conducted at the University Hospital, Ann Arbor, April 9. Participating were:

Drs. Frederick A. Coller, Postoperative Pulmonary Complications: Their Prevention, Recognition and Management.
Dr. Herman Marvin Pollard, The Clinical Syndrome of Gastritis: Causes and Treatment.
Dr. Carl E. Badgley, Injuries of the Elbow Joint.
Drs. Cyrus C. Sturgis and Fred J. Hodges, Medical Roentgen Conference.

Society News.—Dr. Irvine H. Page, Indianapolis, discussed hypertension before the medical section of the Wayne County Medical Society, Detroit, April 14.——The West Side Medical Society was addressed in Detroit, April 16, by Drs. Samuel J. Levin and Frank L. Ryerson on "Eczema and Fungus Allergy" and "Common Diseases of the Fundus of the Eye," respectively. Both are of Detroit.——Dr. Frederick H. Falls, Chicago, discussed "Extrauterine Pregnancy" before the Ingham County Medical Society, Lansing, April 15.——Dr. Robert S. Breakey, Lansing, discussed "Gonococcic Infection in the Female" before the Calhoun County Medical Society, Battle Creek, April 1.

Annual Fracture Day.—The third annual "Fracture Day" will be observed at Hurley Hospital, Flint, on May 21 under the auspices of the Flint regional fracture committee and the Genesee County Medical Society. The following will speak:

Dr. Hardie B. Elliott Jr., Evaluation of Internal Fixation of the Neck of the Femur.
Dr. John H. Curtin, Plaster of Paris Technic.
Dr. Robert B. MacDuff, Pitfalls in X-Ray Diagnosis.
Dr. Raphael W. MacGregor, Fractures of the Spine.
Frederick C. Thorold, D.D.S., Fractures of the Maxilla.
Dr. George J. Curry, Internal Two Plane Fixation of Fractures of Long Bones.
Dr. Leon M. Bogart, The Radiologist in Relation to the Physician.
Dr. Donald R. Brasie, Fractures of the Shoulder Region.
Dr. Jackson E. Livesay, Osteoporosis and Osteogenesis.
Dr. Otto J. Preston, Low Back Pain.

NEW JERSEY

Fifty Year Practitioners Honored.—Twenty members of the Essex County Medical Society who have practiced medicine for fifty years or more were honored at a recent meeting of the society, marking its one hundred and twenty-fifth anniversary. Twelve were present. Scrolls of appreciation were presented to Drs. Edward J. Ill, Frederick W. Becker, Wells P. Eagleton, Fred Hexamer, Clement Morris, Caldwell Morrison, Edward M. Zeh Hawkes, William S. Foster and Robert W. Chapman, Newark; James Henry Clark, Levi W. Halsey, Montclair; John H. Bradshaw, Harry E. Matthews and William M. Brien, Orange; Francis B. Lane and William H. Cooke, East Orange; Albion C. Christian, Irvington; Jacob S. Wolfe, Bloomfield; Henry J. F. Wallhauser, Mount Bethel, Pa., and Richard D. Freeman, South Orange.

NEW MEXICO

State Medical Meeting at Raton.—The fifty-ninth annual meeting of the New Mexico Medical Society will be held at the Hotel Yucca, Raton, May 26-28, under the presidency of Dr. William B. Cantrell, Gallup. The speakers will be:

Col. William Lee Hart, M. C., U. S. Army, Fort Sam Houston, Texas, The Medical Reserve Corps.
Dr. Ozro T. Woods, Dallas, Texas, Treatment of Intestinal Obstruction; Cancer of the Uterus and Its Treatment.
Dr. William R. Lovelace II, Rochester, Minn. (four addresses), Surgery of the Thyroid Gland; High Concentrations of Oxygen as a Therapeutic Agent and Methods of Its Administration; Transportation of Patients by Airplane—Indications and Hazards; Use of Sulfonamide Compounds in the Postoperative Treatment of Patients, Particularly Those Who Have Had Emergency Operative Procedures.
Dr. Hiram D. Newton, San Diego, Calif., Cutaneous Manifestations of Syphilis; Cutaneous Complications in Treatment of Syphilis.
Dr. Onis H. Horrall, Chicago, Fractures of the Os Calcis.
Dr. Richard Mays Smith, Dallas, Treatment of Arthritis; Recent Developments in the Treatment of the Pneumonia Patient.
Dr. Constantine F. Kemper, Denver, Twenty Years with the Use of Insulin; Importance of Technic of Weight Reduction.
Dr. James Rudolph Jaeger, Denver, Diagnosis and Treatment of Injuries to the Spine Involving the Spinal Cord and Nerves.
Dr. Louis W. Breck, El Paso, Texas, Treatment of Fractures in the Aged.
Dr. Ralph M. Stuck, Denver, Treatment of Nerve Injuries of the Upper Extremities.
Dr. Harold D. Corbusier, Plainfield, N. J., Medical Preparedness.
Dr. Meldrum K. Wylder, Albuquerque, Behavior Problems of Children.

There will be round table luncheons Monday and Tuesday and motion picture programs each day.

NEW YORK

New State Cardiac Program.—The state department of health announces a program for the care and treatment of children with rheumatic heart disease to be developed under the direction of Dr. David D. Rutstein, assistant professor of medicine, Albany Medical College, Albany. The program will stress the training of physicians in special cardiac clinics. A survey of the possible need and development of cardiac services in various parts of the state will be made, also investigations on the etiology, prevention and treatment of rheumatic fever and an evaluation of methods of treatment. Hospital care for children with early rheumatic fever will be provided through a ninety-six bed service at the New York State Reconstruction Home at West Haverstraw. The hospital service will be under the immediate direction of Dr. Thistle M. McKee. It is also proposed to establish a model cardiac clinic at West Haverstraw.

New York City

Lilly Award to Dr. Rittenberg.—The sixth Eli Lilly and Company award in biologic chemistry was presented at the spring meeting of the American Chemical Society in St. Louis, April 7, to David Rittenberg, Ph.D., instructor in biochemistry, Columbia University College of Physicians and Surgeons, for his work on isotopes as tracers of chemical action. Dr. Rittenberg is 34 years old and received his doctor's degree in 1934 under Prof. Harold C. Urey at Columbia.

Sectional Meeting on Physical Therapy.—The Eastern section of the American Congress of Physical Therapy held its spring session at the New York Polyclinic Medical School and Hospital, April 5. Speakers at the evening session were Drs. Disraeli W. Kobak, Chicago, "Treatment of Intercostal Neuralgia by Short Wave Diathermy"; Earl C. Elkins, Rochester, Minn., "Skin Temperatures in Relation to Radiant Heat"; Walter M. Solomon, Cleveland, "Gout—A Prevalent Arthritic Disease," and Norman E. Titus, New York, "Present Status of Physical Therapy in the United States Army."

OHIO

State Medical Meeting in Cleveland.—The Ohio State Medical Association will hold its annual session, June 3-4, at the Hotel Cleveland in Cleveland, during the annual session of the American Medical Association. The state association will not present a scientific program and exhibits, but the meeting will consist of two meetings of the house of delegates for the transaction of business and election of officers.

OKLAHOMA

Society News.—Drs. Charles F. Paramore and Edgar E. Rice, Shawnee, discussed obesity at a meeting of the Pottawatomie County Medical Society, Shawnee, April 19.——Drs. Hugh G. Jeter and Wann Langston, Oklahoma City, addressed the Oklahoma County Medical Society, Oklahoma City, recently on laboratory diagnosis and therapy of the anemias. ——Drs. Joseph W. Kelso and Charles P. Bondurant, Oklahoma City, addressed the Stephens County Medical Society recently on "Functional Bleeding" and "General Dermatological Conditions" respectively.——A symposium on peptic ulcers was presented before the Pittsburg County Medical Society, McAlester, recently by Drs. Tracey H. McCarley, Claude E. Lively and Will C. Wait, all of McAlester.——Dr. Arthur G. Schoch, Dallas, Texas, addressed the Tulsa County Medical Society, Tulsa, April 28, on arsenotherapy of early syphilis.

OREGON

Personal.—Dr. Thomas D. Robertson, Portland, has been appointed a member of the state board of health to succeed the late Dr. Roy A. Payne for a term ending Jan. 15, 1945. ——Dr. Rudolph E. Kleinsorge, Silverton, has been appointed a member of the state board of higher education.——Dr. Blair Holcomb, Portland, has been appointed to the Oregon State Nutrition Committee for Defense.

Special Lectures.—The Oregon Academy of Ophthalmology and Otolaryngology and the University of Oregon Medical School sponsored a series of postgraduate lectures in Portland, March 31 to April 5, with Drs. Harold I. Lillie, Rochester, Minn., and Frank E. Burch, St. Paul, as the speakers.—— The Portland Academy of Medicine presented a group of lectures at the University of Oregon Medical School, Portland, May 12-14, with Dr. Virgil H. Moon, Philadelphia, as guest speaker. Dr. Moon's subjects were "Circulatory Failure of Capillary Origin," "Shock: Conditions of Occurrence and Sequelae" and "Shock: Prevention, Early Recognition and Treatment."

PENNSYLVANIA

State Psychiatric Meeting.—The midyear meeting of the Pennsylvania Psychiatric Society was held at the Allentown State Hospital, Allentown, April 10. Speakers were Drs. Harry F. Hoffman and Max Rossman, both of the hospital staff, on "Results of Fever Therapy" and "Childhood Psychoses: Therapeutic Problem" respectively.

Philadelphia

Society News.—Dr. John F. Fulton, New Haven, Conn., addressed the Philadelphia Neurological Society, March 28, on "Physiologic Interpretation of Functions of Basal Ganglia." ——Dr. Robert A. Müller, New York, addressed the Philadelphia Rheumatism Society, April 3, on "Role of Physical Therapy in Treatment of Arthritis."—— Dr. John B. Price, Norristown, among others, addressed the Philadelphia Laryngological Society, April 1, on "The Autonomic Nervous System and Its Relation to Upper Respiratory Symptoms."—— Dr. Erwin O. Strassmann, Houston, Texas, addressed the Obstetrical Society of Philadelphia, April 3, on "The Theca Cone, the Pathmaker of the Ascending Graafian Follicle."—— Speakers before the Philadelphia Roentgen Ray Society, April 3, included Drs. Charles A. W. Uhle on "Urological Manifestations of Abdominal Aneurysms"; David M. Davis, "A New Table for Combined Cystoscopy, Roentgenoscopy and Roentgenography," and George W. Chamberlin, "Some Hazards Associated with Roentgen Diagnosis of Urinary Tract Disease."

Pittsburgh

Annual Meeting.—Speakers for the annual meeting of the Allegheny County Medical Society, May 1, were Drs. Marion B. Sulzberger, New York, on "Eczematous Dermatitis—Diagnosis and Management by the General Practitioner"; Norris W. Vaux, Philadelphia, "Importance of Blood Studies During Pregnancy" and Stuart W. Harrington, Rochester, Minn., "Diaphragmatic Hernia." Dr. Edward J. G. Beardsley, Philadelphia, was the guest speaker at the banquet on "What Life Teaches A Doctor."

SOUTH CAROLINA

State Medical Election.—Dr. Thomas A. Pitts, Columbia, was named president-elect of the South Carolina Medical Association at the annual meeting in Greenville, April 15-17, and Dr. George M. Truluck, Orangeburg, was installed as president. Dr. William Frank Strait, Rock Hill, was elected vice president and Dr. Julian P. Price, Florence, secretary. Offices of the association will be moved to Florence from Seneca, where they were located for about thirty years, during the secretaryship of the late Dr. Edgar A. Hines.

TENNESSEE

Sectional Physical Therapy Meeting.—A meeting of the Southeastern section of the American Congress of Physical Therapy will be held in Chattanooga, May 25-27, at the Hotel Patten. Among the speakers will be:

Drs. Ralph S. Emerson, Roslyn, N. Y., and Kristian G. Hansson, New York, Clinical Application of the Portable Whirlpool Bath.
Dr. John S. Coulter, Chicago, The Scope of Physical Therapy in National Defense.
Dr. Charles I. Singer, Long Beach, N. Y., Application of Climate Therapy to General Medicine.
Dr. Oscar B. Nugent, Chicago, Application of Physical Therapy to the Specialties.
Dr. Max K. Newman, Detroit, Artificial Hypothermia (Freezing Therapy)—Experience with Twenty-Five Cases.
Dr. George W. Owen, Jackson, Miss., Physical Therapeutic Aids in Management of Allergic Conditions.

WISCONSIN

Physicians Honored.—Dr. Emerson A. Fletcher, Milwaukee, was honored at a testimonial dinner recently under the auspices of the Milwaukee Hospital Interns' Association. Dr. Arthur C. Hansen was toastmaster and speakers included Drs. Hans W. Hefke and John S. Gordon, Milwaukee, and Raymond A. Toepfer, West Allis. Dr. Fletcher recently retired after forty-seven years of practice.——Dr. Herman F. Ohswaldt, Oconto Falls, was honored recently when the mayor of the town proclaimed an "Ohswaldt Day." A radio program was broadcast in which friends and patients paid tribute to Dr. Ohswaldt. He is 83 years old and has practiced sixty-two years.

Society News.—Dr. Clifford G. Grulee, Evanston, Ill., addressed the Medical Society of Milwaukee County, Milwaukee, April 11, on "Advantages of Nursing at the Breast." ——Dr. William C. Keettel Jr., Madison, addressed the Barron-Washburn-Sawyer-Burnett Counties Medical Society in Rice Lake, April 4, on "Advances in Obstetrics and Gynecology." ——Dr. Max J. Fox, Milwaukee, discussed "Infantile Paralysis" before the Fond du Lac County Medical Society, Fond du Lac, March 27.——Dr. Berton J. Branton, Willmar, Minn., and George E. Crossen, M.S., Minneapolis, addressed the Polk County Medical Society in Amery in March, with druggists of the county as guests, on "The Roles of Physician and Pharmacist" and "Interprofessional Relationships" respectively.—— Dr. Aubrey H. Pember, Janesville, addressed the Rock County Medical Society, Beloit, March 25, on asthenopia.——Dr. Henry R. Viets, Boston, addressed the University of Wisconsin Medical Society, Madison, April 22, on "Our Present Knowledge of Myasthenia Gravis."

WYOMING

Hospital News.—Dr. Joseph F. Whalen, superintendent of the Wyoming State Hospital, Evanston, resigned, April 30, it is reported.

State Medical Meeting at Casper.—The thirty-eighth annual meeting of the Wyoming State Medical Society will be held at Casper, May 18-20, with headquarters at the Gladstone Hotel. The guest speakers will be:

Dr. Robert D. Schrock, Omaha, Fracture and Dislocations of the Astragalus.
Dr. Robert G. Packard, Denver, Prevention and Treatment of Malunion and Nonunion in Fractures of the Long Bones.
Dr. Robert L. Jackson, Iowa City, Infant Feeding; also Respiratory Infections of Children.
Dr. Luman E. Daniels, Denver, Neurosyphilis, with Emphasis on Its Early Recognition.
Dr. Joseph Raymond Plank, Denver, Treatment of Varicosities and Their Complications.
Dr. Everett D. Plass, Iowa City, Uterine Fibroids; also Hypertension in Pregnancy.
Dr. George P. Lingenfelter, Denver, Some Recent Advances in Dermatology.
Gordon E. Davis, Sc.D., U. S. Public Health Service, Hamilton, Mont., Relapsing Fever.

Dr. Plass will lead a forum discussion on maternal deaths Monday morning, after which there will be a luncheon at the Natrona County Memorial Hospital at which Dr. Earl E. Whedon, Sheridan, will preside over a discussion of subjects presented at the morning session. A golf tournament will be held Sunday at the Casper Country Club and Community Course followed by a smoker in the evening at the Gladstone Hotel.

GENERAL

Medical Library Meeting.—The forty-third annual meeting of the Medical Library Association will be held at the University of Michigan Medical School, Ann Arbor, May 29-31, under the presidency of Col. Harold W. Jones of the Army Medical Library, Washington, D. C. Hotel headquarters will be at the Michigan Union. The program will include papers on the cooperation of libraries, union catalogues, medical history and industrial medicine.

Society News.—Maurice A. Bigelow, Ph.D., New York, was reelected president of the American Eugenics Society at the fifteenth annual meeting in New York March 31. Speakers included Frederick Osborn, New York; Dr. William Allan, Charlotte, N. C.; Dr. Edward J. Humphreys, Thiells, N. Y., of the New York State Department of Mental Health, and Morton D. Schweitzer, Ph.D., New York. The general topic of the conference was "Human Ability—Democracy's Basic Defense."

Infantile Paralysis Pamphlet in Spanish.—The National Foundation for Infantile Paralysis has published a Spanish translation of its recent pamphlet on "The Nursing Care of Patients with Infantile Paralysis" by Jessie L. Stevenson, R.N., consultant in orthopedic nursing for the National Organization for Public Health Nursing. The pamphlet, illustrated with line drawings, was prepared as a part of a project in orthopedic nursing sponsored by the foundation. It is intended to assist the public health nurse and others responsible for home care of patients with infantile paralysis. Copies in either Spanish or English are available free on request from the National Foundation for Infantile Paralysis, 120 Broadway, New York.

Annual Meeting of Diabetes Association.—The first annual session of the American Diabetes Association will be held at the Hotel Hollenden, Cleveland, June 1, under the presidency of Dr. Cecil Striker, Cincinnati. Speakers will be:

Drs. Charles Best and Reginald E. Haist, Toronto, Ont., The Prevention of Diabetes.
Dr. I. Arthur Mirsky, Cincinnati, Etiology of Diabetic Acidosis.
Dr. Seale Harris, Birmingham, Ala., Hyperinsulinism: Induced and Spontaneous Hypoglycemia.
Dr. Herman O. Mosenthal, New York, Standards of Diabetes Therapy.
Drs. Julian D. Boyd, Robert L. Jackson and James H. Allen, Iowa City, Avoidance of Degenerative Changes in the Child with Diabetes Mellitus.

Dr. Elliott P. Joslin, Boston, will deliver the Banting Memorial Lecture in the evening on "Diabetes—Yesterday, Today and Tomorrow."

American Therapeutic Society.—The forty-second annual meeting of the American Therapeutic Society will be held in Cleveland at the Hotel Cleveland, May 30-31, under the presidency of Dr. Louis F. Bishop Jr., New York. Among the speakers will be:

Dr. Oscar B. Hunter, Washington, D. C., Intoxication Tests for Drinking Drivers and Pedestrians.
Dr. Harold S. Davidson, Atlantic City, N. J., Treatment of Septic Thrombophlebitis with Heparin and Sulfathiazole.
Dr. Kenneth M. Lewis, New York, Present Status of Chemotherapy in Surgical Infections.
Dr. Mathew Jay Flipse, Miami, Yellow Bone Marrow—Its Effect on the Leukocytes in the Peripheral Blood in Certain Cases of Leukopenia.
Dr. Watt W. Eagle, Durham, N. C., Use of Estrogenic Substances in the Treatment of Atrophic Rhinitis.
Dr. Frank W. Hartman, Detroit, Status of Whole Blood and Plasma Transfusion in Intravenous Therapy.
Dr. Arthur C. Ernstene, Cleveland, Angina Pectoris in Young Persons with Aortic Insufficiency.

Academy of Tuberculosis Physicians.—The annual session of the American Academy of Tuberculosis Physicians will be held at the Hollenden Hotel, Cleveland, June 2, under the presidency of Dr. Oscar S. Levin, Denver, who will speak on "The Specialist in Tuberculosis." Among the speakers will be:

Lieut. Col. William C. Pollock, M. C., U. S. Army, Tuberculosis Problem During Military Mobilization.
Col. David Townsend, M. C., U. S. Army, Bristol, Tenn., Post-influenzal Sequelae: Special Reference to the Lungs.
Dr. Magnus B. Halldorson, Winnipeg, Man., Canada, Immunity in Tuberculosis.
Lieut. Col. George F. Aycock, M. C., U. S. Army, Voluntary Termination of Artificial Pneumothorax: A Review of 200 Reexpanded Cases.
Dr. Leroy Elrick, Denver, Coexistence of Chronic Pulmonary Tuberculosis and Syphilitic Aneurysm of the Aorta.
Dr. Harry J. Corper, Denver, Technicality of the Tuberculin Tests: A Proposed Transdermal or Transcutaneous Test.
Lieut. Col. Hugh W. Mahon and Capt. John B. Grow, M. C., U. S. Army, Contributory Causes of Death in Patients Suffering from Pulmonary Tuberculosis.

Meeting of Ophthalmologists.—The American Ophthalmological Society will hold its seventy-seventh annual meeting at The Homestead, Hot Springs, Va., May 29-31. Among the speakers will be:

Drs. Phillip Robb McDonald and Francis Heed Adler, Philadelphia, Studies on Pigmentary Degeneration of the Retina: Role of the Melanophore Hormone of the Pituitary Gland in Pigmentary Degeneration of the Retina.
Dr. Bernard Samuels, New York, Pathologic Anatomy of the Lens Following Corneal Ulcers and Corneal Scars.
Dr. Arnold Knapp, New York, On the Operative Treatment of Congenital Subluxation of the Lens.
Drs. Harry S. Gradle, Chicago, and Hyman Saul Sugar, Detroit, Wound Rupture After Cataract Extraction.
Dr. Alexander E. MacDonald, Toronto, Ocular Kinetic Righting Reflex.
Dr. Arthur J. Bedell, Albany, N. Y., Papilledema Without Increased Intracranial Pressure.
Dr. Philip Meriwether Lewis, Memphis, Tenn., Gonococcic Conjunctivitis: A Comparison of Sulfanilamide, Sulfapyridine and Sulfathiazole in the Treatment of One Hundred and Twenty Cases.

Association for the Surgery of Trauma.—The third annual session of the American Association for the Surgery of Trauma will be held in Montreal, Que., May 29, with headquarters at the Ritz-Carleton Hotel, and May 30-31 at the Seigniory Club. Dr. Fraser B. Gurd, Montreal, will deliver his presidential address Friday morning. Included among other speakers will be:

Dr. Isidore Cohn, New Orleans, Fractures Involving the Elbow Joint.
Dr. Clay Ray Murray, New York, Conditions Complicating the Treatment of Injuries to the Menisci of the Knee Joint.
Comdr. Frederick R. Hook, M. C., U. S. Navy, Washington, D. C., Carpal Fractures as Seen in the Naval Service.
Dr. Carleton Mathewson Jr., San Francisco, A Method of Ambulatory Treatment of Spiral and Oblique Fractures of the Tibia.
Drs. Henry C. Marble and Edward Hamlin Jr., Boston, Injuries to the Peripheral Nerves.
Dr. Grover C. Weil, Pittsburgh, The Local Therapeutic Effect of Sulfathiazole.
Dr. Idys Mims Gage, New Orleans, Subcutaneous Traumatic Injury of the Abdominal Viscera.

American Heart Association.—The seventeenth scientific session of the American Heart Association will be held at the Hotel Statler, Cleveland, May 30-31. The Lewis A. Conner Memorial Lecture will be delivered Friday afternoon by David B. Dill, Ph.D., Cambridge, Mass., on "Effect of Physical Strain and High Altitude on the Heart and Circulation," and the George Brown Memorial Lecture, Saturday afternoon, by Dr. Alfred Blalock, Nashville, Tenn., on "Peripheral Circulatory Failure." Friday evening there will be a round table discussion on "The Soldier and His Heart" with the following speakers: Drs. Paul D. White, Boston; Bernard S. Oppenheimer, New York; Eugene S. Kilgore, San Francisco, and Comdr. John R. Poppen, M. C., U. S. Navy, Washington, D. C. Other speakers will include:

Dr. Ashton Graybiel, Boston, The Range of the Normal Electrocardiogram Based on the Records of a Thousand Young Aviators.
Dr. Ignacio Chavez, Mexico, D. F., Incidence of Heart Disease in Mexico.
Drs. Irving S. Wright, Gerald H. Pratt and Michael Lake, New York, Effect of Ten Years of Occupational Sitting, Standing or Climbing Stairs on the Blood Vessels of the Lower Extremities.
Louis I. Dublin, Ph.D., New York, Heart Disease and Public Health: Current Trends and Prospects.

Meeting of Chest Physicians.—The seventh annual meeting of the American College of Chest Physicians will be at the Statler Hotel, Cleveland, May 31-June 2, under the presidency of Dr. John H. Peck, Oakdale, Iowa. Included among the speakers will be:

Dr. Chevalier L. Jackson, Philadelphia, Bronchial Obstruction as an Etiologic and Perpetuating Factor in Emphysema.
Dr. Frederick H. Falls, Chicago, Pregnancy and Tuberculosis.
Drs. William E. Ogden, George C. Anglin, William C. Kruger, Toronto, Canada, Foreseeing and Forestalling Tuberculosis: A Ten Year Study.
Drs. Dean B. Cole, Walter L. Nalls, Richmond, Va., Management of Fluids Complicating Pneumothorax.
Dr. Ralph C. Matson, Portland, Ore., A New Extrapleural Pack in the Treatment of Pulmonary Tuberculosis.
Dr. Ralph R. Mellon, Pittsburgh, Some of the Newer Concepts of the Tubercle Bacillus and Its Chemical Susceptibilities.
Dr. George G. Ornstein, New York, Clinical Aspects of Cancer of the Lungs.
Dr. Willard Van Hazel, Chicago, Present Day Treatment of Empyema, a Report of Over 500 Cases.

Louis I. Dublin, Ph.D., of the Metropolitan Life Insurance Company, New York, will be the banquet speaker, discussing "The Next Ten Years in Tuberculosis: A Forecast."

CORRECTION

Thiamine Overdosage and Toxicity.—In the communication by Dr. Clarence A. Mills, Cincinnati, in THE JOURNAL, May 3, page 2101, the dose mentioned in the second line of the second paragraph should have been 10 mg. instead of 10 Gm.

Foreign Letters

LONDON

(From Our Regular Correspondent)

April 25, 1941.

The Total Casualties of the War

Official figures of the casualties of the war to date have just been published. They are as follows:

	Killed	Wounded
Civilians	29,856	40,897
	Killed and Missing	Wounded
Armed forces	37,607	25,895

Civilians classified as to men, women and children were:

	Killed	Injured and Detained in Hospital
Men	13,712	21,811
Women	12,112	15,893
Children under 16	3,644	3,193
Unclassified	388	
Total	29,856	40,897

The Destruction of St. Thomas's Hospital

Of all the great London hospitals, St. Thomas's has suffered most from the air attacks on London. The damage to it is estimated at $5,000,000. Situated on the bank of the Thames opposite the houses of Parliament, it is possible to give the German bombers, who operate at a great height, credit for attempting to destroy the latter and not the hospital. But it can be said of them, here as elsewhere, that the bombing of hospitals—a thing which they have now done hundreds of times—is part of the practice of "frightfulness" and seems to be followed without any reluctance. Indeed, in the analogous case of hospital ships clearly emblazoned with the Red Cross, we have repeated examples of deliberate bombing.

The normal work of St. Thomas's Hospital has been transferred to the country, to a branch of three hundred and fifty beds in the heart of Surrey. It is built on the hutment plan and has been used as a hospital for Australian troops. The problem of housing the staff is difficult in view of the shortage of accommodation. As a war time measure, nurses and other members of the staff will live in huts. Altogether a staff of more than three hundred will be boarded and maintained. The students will be a few miles away in an old manor house. There will be a special ward for air raid casualties to children. The problem of catering for about one thousand persons transferred to the country will be solved by food convoys, which will travel to and fro from the parent hospital in London. Work at the latter has not entirely ceased. The accommodation for inpatients has been reduced from six hundred and eighty to one hundred beds. The normal outpatient department with its various clinics is being maintained, and casualties, including those from air raids, will be treated.

Polish School of Medicine Opened at Edinburgh University

The Polish School of Medicine, described as "the first demonstration by the scientific world against Hitler's 'new order,'" has been opened at Edinburgh University. The ceremony took place in McEwan Hall with Sir Thomas Holland, vice chancellor, presiding. The school is being provided for the Polish government by the senate of Edinburgh University. The first beneficiaries will be men who have completed their studies in Poland but who, because of the war, did not sit for their final examination. The dean of the Edinburgh Faculty of Law presented the Polish president for the honorary degree of Doctor of Laws, saying that they admitted him to the roll of honor as a great lawyer, soldier, administrator and patriot. Expressing thanks, President Raczkiewicz said the world today, rent by the disaster of war, was seeking to evolve new forms in national and international relations and to set the ideas of justice and freedom against the spirit of conquest embodied in the "new order." He expressed the unshakable faith of his nation and himself that a world commonwealth based on Christian ethics and observance of international law would be born from the respect of the rights of individuals and nations and the sound cooperation of states in political and economic spheres.

The Danger of a Gas Attack

A gas attack on this country has been expected but has not occurred. Mr. Herbert Stanley Morrison, Home Secretary, stated in the House of Commons that the use of gas is abhorrent to the government and that under no circumstances shall we be the first to employ it. No attention should be paid to any attempt by the enemy to cast doubts on our attitude or to suggest that our defensive measures imply some intention to take the initiative. Unhappily we cannot put any faith in his statement that he will not use gas. His whole record shows that he will stop at nothing, and that if he thinks gas will give an advantage he will use it. Therefore we must be prepared. With the measures of protection now available there is no ground for alarm as to gas attacks, provided the precautions advised are adopted. The government is determined to ensure that the whole population is in a full state of preparedness. Mr. Morrison subsequently gave a broadcast urging every one to carry his gas mask at all times. Properly put on and properly used, it afforded complete protection against every form of war gas that was known. The enemy had declared that he would not use gas, but neutral observers in a good position to form an opinion publicly stated that Germany was making active preparations to use gas. His declarations commanded no confidence anywhere in the world. One of the likeliest reasons that he would was that he might regard gas as his last hope of doing what he had failed to do—to stampede the civilian population.

Mobile Unit for Physical Therapy

Lord Horder, president of the Chartered Society of Massage and Medical Gymnastics, presented, on behalf of subscribers, a physical therapy mobile unit, which is complete with its driver and a skilled masseur, for use in Red Cross work. It makes its own electricity for electrical treatment and will be used for visiting convalescent homes and hospitals in central England. The unit contains all the necessary apparatus for giving electrical and light treatments, such as galvanism, infrared rays, radiant heat, ultraviolet radiation and paraffin-wax baths. The unit is the first of its kind and is to be followed by others.

Smoking and the Use of Makeup by Nurses

Smoking and the use of makeup by nurses have given rise to some trouble. In one case a high military officer, inspecting a civil defense hospital, caused a sensation by expressing disapprobation of the lips of an important lady, a voluntary worker, who supervised the nursing. The outcome has not been published. The British Red Cross Society has been exercized as to these practices and has decided that present day conditions render it unfair to forbid nurses from smoking in uniform on suitable occasions, such as visiting theaters, restaurants and cinemas. But the society strongly discourages its women members from smoking outdoors in public, when in uniform. The same attitude has been taken by the heads of the woman services attached to the fighting forces. With regard to makeup, the society does not object to it when used with discretion.

A Physician Who Became a Great Ornithologist

The death of Dr. C. B. Ticehurst at the age of 60 years has removed a great ornithologist. Educated at Guy's Hospital, his professional life was spent in general practice except for service in the last war at a military hospital. As an ornithologist he gained an international reputation. He visited many countries and in the course of these travels made an important reference collection of birds. His main interest was with the systematics, geographic distribution, migration and plumage changes of the birds of Palestine and the Indo-Burmese areas. In 1931 he became editor of *Ibis*, the quarterly journal of the British Ornithologists Union. At the time of his death he was engaged in systematic work on the birds of India, Burma and Ceylon.

BUENOS AIRES

(From Our Regular Correspondent)

Feb. 14, 1941.

Chemotherapy of Organic Arsenic Compounds

Arsenic compounds were recently discussed by Dr. Ernst Friedheim, privatdocent in the medical faculty of Geneva, Switzerland, who at present is engaged in scientific research in Buenos Aires, before the Argentine Association of Dermatology and Syphilology. He discussed a new synthetic arsenic compound of which he is the discoverer, namely a sodium salt, 4.4'-dihydro-arsenobenzene-3.3'-bis [(azo-2) naphthol-1-disulfonic acid-4.8]. It is a dark blue violet substance containing 13.8 per cent of arsenic readily soluble in water but insoluble in lipoids. Unlike neoarsphenamine, this compound can be produced in a crystalline, analytically pure form. It does not contain the orthoamino-oxyl and the aminomethylene-sulfoxylate groups which make neoarsphenamine an unstable product. It preserves its stability indefinitely in contact with air if kept dry and in a laboratory temperature of from 64 to 82 F. This substance seems to be able to transcend the hematoencephalic and hemato-ocular barrier.

It has already been tried out on trypanosomiasis and in syphilis, both in French and in British colonial possessions. In 41 cases of trypanosomiasis it was able to cause Trypanosoma to disappear from the blood, the lymph nodes and the cerebrospinal fluid. Clinical symptoms rapidly receded. Seventeen cases of syphilis of the skin were treated in Africa and 23 cases in Santiago de Chile. In the State Institute of Bacteriology of Chile the spirocheticidal action of the drug could be observed ultramicroscopically day by day in the dermatologic clinic of Professor Prats. The cases were chancre and papuloerosive cases and were treated with from 0.25 to 0.5 Gm. of the new compound. The effect can be judged from the fact that in 13 cases one injection, in 8 two injections and in 2 cases three injections killed off the spirochetes.

The new drug in somewhat heavier doses (10 per cent) possesses a more rapid spirocheticidal effect (43 per cent) than neoarsphenamine. Tolerance of the drug in all cases of syphilis as well as in trypanosomiasis was good.

Professor Baliña, syphilologist, in whose clinic experiments with the new drug are being made, pointed out that the chief value of the drug resided in the fact that cerebromedullary cases of syphilis could be treated with it. If it could actually clear the hematoencephalic barrier and make the fine nerve tissues accessible to therapeutic action it would take the place of pentavalent arsenic compounds and of malaria therapy.

Heart Diseases in Children

Dr. José María Macera, associate professor of pediatrics at the university of Buenos Aires and director of the children's clinic in the Hospital Pirovano and of the medicosocial service of the Public Aid for rheumatic children, studied the problem of heart diseases of school children in collaboration with Dr. Alberto P. Ruchelli. This is the first inclusive contribution to this problem undertaken in Argentina. In one school district, 201 cases of acquired heart diseases were discovered among the 10,000 children (2.1 per cent). Of these cardiac lesions 50.24 per cent could be attributed to rheumatism. Epistaxis was observed in 25.42 per cent. Primary cardiac rheumatism occurred in 0.64 per cent. To the cases of acquired heart diseases must be added 0.39 per cent of congenital heart trouble. Accidental cardiac murmurs were found in 4.27 per cent of the cases. Children with accidental cardiac murmurs should be examined electrocardiographically. In 3.6 per thousand, the presence of an abnormal congenital communication between the ventricles of the heart was noted (Roger's disease). The authors emphasize the need of vocational guidance for children with cardiac disorders on graduation in order to prevent subsequent disaster. They cite the example set by the United States during the last twenty years.

Pulmonary Carcinoma

Dr. Julio Palacios and Egidio S. Mazzei, associate professors of the First Medical Clinic of the faculty of medicine of Buenos Aires, published a monograph on pulmonary carcinoma, sarcoma and lymphogranuloma, based on 120 cases. Some new forms are described, namely an osteoarthropathy (Pierre-Marie-Bamberger) characterized by hypertrophy: the pseudocardiac, in which the tumor simulates a cardiac lesion (angina pectoris, paroxysmal tachycardia or cardiac insufficiency) and the painful thoracicobronchial syndrome (paralysis brachialis inferior Dejerine-Klumpke and shadow at the apex of the thorax), significant for incipient carcinoma of the apex of the lung. In discussing atelectasis due to bronchial carcinoma the authors stress two signs: tracheal deviation on inspiration in the superior lobe during palpation of the fossa suprasternalis and roentgenologically an undue brightness appearing in the healthy lobe adjoining the atelectatic lobe.

Brief Mention

In Mendoza, capital of the Argentine province of the same name, a department of nutrition has been instituted. This is the only organization of its kind in Argentina outside the well known National Institute of Nutrition in Buenos Aires. It is to combat the extensive malnutrition found in the province as well as goiter conditions.

The third Chilean and American Congress for Surgery met, February 14-18, in Santiago de Chile. Representatives from Chile, Argentina, Peru, Paraguay and Uruguay attended. The themes discussed were head injuries, early diagnosis of carcinoma of the stomach and colon surgery.

Personal

Dr. Alberto Marsal was appointed professor of physiologic chemistry in the faculty of medicine of the University of Córdoba. Under a grant from the Guggenheim Foundation he studied at Harvard, Cornell and Rochester during 1937-1939.

Dr. Vicente Dimitri, who has been director of the neurologic division at the Hospital Alvear since 1917, was appointed professor of neurology at the faculty of medicine of the University of Buenos Aires. He is founder and editor of the *Revista neurológica de Buenos Aires.*

Marriages

CHARLES LEMUEL PRINCE III, Charlottesville, Va., to Miss Katherine Wachob Eaton of Pittsburgh, February 15.

WILLIAM FITZGERALD CAVEDO to Miss Edith Earline Mann, both of Richmond, Va., February 12.

WILLIAM STERRY BRANNING to DR. NANCY BOWMAN WISE, both of Durham, N. C., in February.

EUGENE BOWIE SHEPHERD to Miss Mary Walker Lewis, both of Richmond, Va., February 24.

Deaths

Willis Cohoon Campbell ✠ Memphis, Tenn.; University of Virginia Department of Medicine, Charlottesville, 1904; chairman of the Section on Orthopedic Surgery of the American Medical Association, 1922-1923, and member of its House of Delegates in 1939; past president of the Memphis and Shelby County Medical Society, Clinical Orthopedic Society, Southeastern Surgical Congress, American Academy of Orthopedic Surgeons and the American Orthopedic Association; in 1937 secretary of the American delegation to the International Society of Orthopedic Surgery; member of the Southern Surgical Association and the American Association for the Surgery of Trauma; fellow and member of the board of governors from 1936 to 1939, of the American College of Surgeons; professor of orthopedic surgery, University of Tennessee College of Medicine; chief of staff, Willis C. Campbell Clinic, Crippled Children's Hospital School and Hospital for Crippled Adults; consultant in orthopedic surgery, Baptist Memorial and St. Joseph's hospitals and the United States Marine Hospital; attending orthopedic surgeon, Methodist Hospital; author of "Orthopedics of Childhood," "Injuries and Surgical Diseases of the Joints," "Dislocations of Joints," "Orthopedic Surgery," "Physical Therapy in Bone and Joint Tuberculosis"; aged 60; died, May 4, in St. Luke's Hospital, Chicago.

Frank Clinch Hammond ✠ Philadelphia; Jefferson Medical College of Philadelphia, 1895; instructor of gynecology at his alma mater from 1896 to 1905; honorary dean and professor of gynecology at the Temple University School of Medicine; past president of the Philadelphia County Medical Society, Obstetrical Society of Philadelphia and the Philadelphia Clinical Association; fellow of the American College of Surgeons; in 1925 was appointed editor of the *Atlantic Medical Journal*, predecessor of the *Pennsylvania Medical Journal*, and served until 1941, when he became editor emeritus; in 1918 medical aide to the governor of Pennsylvania; aged 66; visiting obstetrician and gynecologist, Philadelphia General Hospital; visiting gynecologist, Philadelphia Hospital for Contagious Diseases; consulting obstetrician and gynecologist, Jewish Hospital; consulting gynecologist, Newcomb Hospital, Vineland, N. J., Delaware County Hospital, Drexel Hill, Skin and Cancer Hospital, Philadelphia, and the Riverview Hospital, Norristown, Pa.; gynecologist, Temple University Hospital, where he died, April 12.

Charles Waldo Stickle ✠ Brooklyn; University of the City of New York Medical Department, 1893; adjunct clinical professor of otology from 1913 to 1916, clinical professor and professor from 1916 to 1920, clinical professor from 1920 to 1923 and from 1923 to 1930 professor at the Long Island College Hospital; in 1930, when the school became the Long Island College of Medicine, he was made professor of clinical otolaryngology, serving until 1937, when he became emeritus professor; chief of the eye clinic from 1913 to 1916, aural surgeon from 1916 to 1920, otolaryngologist from 1920 to 1924, attending otolaryngologist from 1924 to 1937 and consulting otolaryngologist since 1937, the Long Island College and Coney Island hospitals; attending otologist, Brooklyn Jewish Hospital from 1906 to 1925; attending laryngologist from 1910 to 1920, Methodist Hospital; aged 70; died, March 8, of cerebral thrombosis.

Stewart Ralph Roberts ✠ Atlanta, Ga.; Atlanta College of Physicians and Surgeons, 1900; member of the House of Delegates of the American Medical Association from 1916 to 1920; professor of clinical medicine at the Emory University School of Medicine; fellow and formerly vice president and member of the board of regents of the American College of Physicians; member of the American Clinical and Climatological Association; past president of the Southern Medical Association, Fulton County Medical Society and the American Heart Association; formerly secretary of the Southern Interurban Clinical Society; at one time vice president of the Medical Association of Georgia; served during the World War; on the staffs of the Emory University, Georgia Baptist and the Grady hospitals; author of "Pellagra"; aged 62; died, April 14, of coronary occlusion and hypertension.

David A. Strickler ✠ Denver; Hahnemann Medical College of Philadelphia, 1881; from 1914 to 1923 president of the Federation of State Medical Boards of the United States; member of the National Board of Medical Examiners from 1919 to 1932; member from Jan. 13, 1902 to July 5, 1911 and secretary-treasurer of the state board of medical examiners from July 5, 1911 to July 5, 1927; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; at one time dean and professor of ophthalmology at the Denver College of Physicians and Surgeons; formerly professor of ophthalmology and otolaryngology, University of Minnesota Medical School, Minneapolis; aged 82; died, March 29, in the Mercy Hospital of adenocarcinoma of the hepatic flexure of the colon.

Bryant Davis Wetherell, Boston; Harvard Medical School, Boston, 1918; professor of clinical urology at the Tufts College Medical School; member of the Massachusetts Medical Society; member of the American Urological Association and the New England Dermatological Society; fellow of the American College of Surgeons; associate urologist, Massachusetts General Hospital; genitourinary surgeon, St. Elizabeth's Hospital and Boston Dispensary, Boston, Cambridge (Mass.) Hospital and the Brooks Hospital, Brookline, Mass.; consulting urologist, Massachusetts Eye and Ear Infirmary, Boston, Anna Jaques Hospital, Newburyport, and the Amesbury (Mass.) Hospital; aged 52; died, March 5.

Ralph Hayward Simmons ✠ Lieutenant Colonel, M. C., U. S. Army, Fort Adams, R. I.; Tufts College Medical School, Boston, 1913; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; member of the Massachusetts Medical Society; served during the World War; entered the medical corps of the United States Army as a captain in 1920, in 1929 was promoted to major and in 1937 to lieutenant colonel; aged 51; died, March 13, in the Walter Reed General Hospital, Washington, D. C., of arterial hypertension and cardiac decompensation.

Charles S. Young, Geneseo, Ill.; Detroit College of Medicine, 1896; member of the Illinois State Medical Society; past president of the Henry County Medical Society; past president of the Iowa-Illinois Central District Medical Association, 1918-1919; for many years president of the board of the Henry County Tuberculosis Sanatorium, Rock Island, and the J. C. Hammond City Hospital; health officer of Geneseo from 1912 to 1918; for many years a member of the high school board; local surgeon for the Rock Island Railway; aged 67; died, March 9, of chronic myocarditis.

Thomas Vincent Hynes, New Haven, Conn.; Yale University School of Medicine, New Haven, 1900; member of the Connecticut State Medical Society; fellow of the American College of Surgeons; assistant in obstetrics from 1901 to 1904 and instructor in clinical obstetrics from 1904 to 1918 at his alma mater; on the staff of the New Haven Hospital and St. Raphael Hospital; formerly chief obstetrician and past president of the medical staff of Grace Hospital; aged 67; died, March 31, of coronary thrombosis.

William C. Mitchell, Denver; University of Maryland School of Medicine, Baltimore, 1889; director of laboratories, state board of health; formerly bacteriologist, city board of health; professor of bacteriology at the University of Denver Medical Department, which later became the University of Colorado School of Medicine, where he was professor of bacteriology emeritus; aged 72; died, March 31, in the Mercy Hospital of coronary thrombosis.

Doran Jay Stephens ✠ Rochester, N. Y.; University of Rochester School of Medicine and Dentistry, 1929; assistant professor of medicine at his alma mater; member of the American Society for Clinical Investigation; assistant in medicine, Washington University School of Medicine, and resident physician, Barnes Hospital, St. Louis, 1931-1932; on the staff of the Strong Memorial Hospital; aged 37; died, March 19, of pneumonia.

A. Merrill Miller ✠ Danville, Ill.; Northwestern University Medical School, Chicago, 1901; past president of the Vermilion County Medical Society; fellow of the American College of Surgeons; aged 64; attending surgeon, St. Elizabeth's Hospital; consulting surgeon, Veterans Administration Facility; surgeon, Lakeview Hospital, where he died, March 19, of cerebral hemorrhage.

Loy McAfee, Washington, D. C.; Medical College of Indiana, Indianapolis, 1904; for many years employed as a contract surgeon in the medical service of the United States Army; assistant editor in chief of "The Medical Department of the United States Army in the World War"; aged 72; died, February 17, in the Walter Reed General Hospital of heart disease.

Peter Owen Shea ✠ Worcester, Mass.; College of Physicians and Surgeons, medical department of Columbia College, New York, 1895; veteran of the Spanish-American War; for many years city health officer; at one time a member of the school committee; formerly trustee of the Grafton State Hospital, North Grafton; aged 70; died, March 10, of chronic myocarditis.

Bruce Lichty, Meyersdale, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1892; member of the Medical Society of the State of Pennsylvania; served during the World War; for many years member of the board of education and president of the board of health; aged 75; died, March 8, in the Hazel McGilvery Hospital of coronary occlusion.

Elizabeth Hall McCullough ✠ North Bennington, Vt.; Columbia University College of Physicians and Surgeons, New York, 1933; member of the New England Pediatric Society; on the staff of the Henry W. Putnam Memorial Hospital; attending physician, Bennington College Health Service from 1939 to 1941; aged 33; was killed, March 14, in an automobile accident.

Charles Gibson McGaffin, Brooklyn; Albany (N. Y.) Medical College, 1908; member of the American Psychiatric Association and the New England Society of Psychiatry; superintendent of the Coney Island Hospital; formerly superintendent of the New York Children's Hospital, New York; aged 58; died, March 26, of acute coronary occlusion.

Charles Lewis Gaulden ✠ Los Angeles; Tulane University of Louisiana School of Medicine, New Orleans, 1912; fellow of the American College of Surgeons; served during the World War; on the staffs of the Cedars of Lebanon and California hospitals; aged 53; died, March 3.

George B. McKnight, Fond du Lac, Wis.; Hahnemann Medical College and Hospital, Chicago, 1889; formerly health officer; for many years trustee of Sunny View Sanatorium, Winnebago; on the staff of the Fond du Lac County Insane Asylum; aged 77; died, March 5.

George Charles Dittmann, Chicago; College of Physicians and Surgeons, School of Medicine of the University of Illinois, 1902; member of the Illinois State Medical Society; aged 65; died, March 1, in the Swedish Covenant Hospital, of carcinoma of the stomach.

Morris A. Goodstone, Pittsburgh; Western Pennsylvania Medical College, Pittsburgh, 1892; at one time chief of the medical staff and for many years trustee of the Montefiore Hospital; aged 74; died, March 2, of embolus following cholecystoduodenostomy.

Benjamin Newton Novy, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1906; served during the World War; aged 58; died, March 5, in the Michael Reese Hospital of gastric ulcer with hemorrhage.

Robley Dunglison Snively ✠ Philadelphia; Medico-Chirurgical College of Philadelphia, 1895; on the staffs of the Abingdon (Pa.) Memorial Hospital, the Germantown Hospital and the National Stomach Hospital; aged 68; died, March 15, of heart disease.

John Tucker Halsell ✠ Laredo, Texas; Fort Worth School of Medicine, Medical Department of Fort Worth University, 1898; fellow of the American College of Surgeons; veteran of the Spanish-American and World wars; aged 66; died, March 16.

Joseph Hiram Laws ✠ Broken Arrow, Okla.; University of the South Medical Department, Sewanee, Tenn., 1899; Vanderbilt University School of Medicine, Nashville, 1900; aged 66; died, February 7, in a hospital at Tulsa of carcinoma of the liver.

John P. Stewart ✠ Frankfort, Ky.; University of Louisville Medical Department, 1893; past president of the Franklin County Medical Society; aged 71; died, March 8, in the Norton Memorial Infirmary, Louisville, of cerebral arteriosclerosis and pneumonia.

James Clarence Cowan, New Haven, Ind.; American College of Medicine and Surgery, Chicago, 1905; member of the Indiana State Medical Association; for many years on the staff of the Lutheran Hospital, Fort Wayne; aged 63; died, March 15.

Henry H. Sugg, Mount Vernon, Ind.; American Medical College, St. Louis, 1890; formerly secretary of the board of health, and county health officer; aged 74; died, March 4, in the Welborn-Walker Hospital, Evansville, of intestinal obstruction.

Lee Everett Strong, Indianapolis; Indiana University School of Medicine, Indianapolis, 1910; member of the Indiana State Medical Association; aged 54; died, March 1, in the Methodist Hospital of hepatic insufficiency and paralytic ileus.

Thomas Lawson Stringer, Algonac, Mich.; University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1889; Victoria University Medical Department, Coburg, Ont., Canada, 1889; aged 81; died, March 10, of coronary thrombosis.

John S. Pearce, Portales, N. M.; Tulane University of Louisiana School of Medicine, New Orleans, 1895; aged 75; died, February 6, in the Memorial Hospital, Clovis, of septicemia due to ischiorectal abscess.

Harry Sherman Flynn ✠ Providence, R. I.; Harvard Medical School, Boston, 1893; aged 72; died, March 20, in the Rhode Island Hospital of fracture of the neck of the right femur and coronary occlusion.

Carl Niel Larsen, Broomfield, Colo.; Detroit College of Medicine and Surgery, 1915; served during the World War; instructor in physiology at his alma mater, 1916-1917; aged 51; died, February 13.

Thomas Francis Carroll, New York; Harvard Medical School, Boston, 1899; served during the World War; on the staff of the Veterans Administration Facility, Bronx, aged 67; died, February 7.

Israel Samuel Millstone, Gary, Ind.; Cleveland Homeopathic Medical College, 1900; at one time secretary of the board of health of Gary; aged 80; died, March 12, in the Mercy Hospital.

Nathan Barnet Jacobson, Long Beach, N. Y.; Jefferson Medical College of Philadelphia, 1913; aged 53; died, March 9, in Miami Bearch, Fla., of chronic valvular disease and pulmonary infarction.

Edgar S. Ferris, New Castle, Ind.; Jefferson Medical College of Philadelphia, 1885; member of the Indiana State Medical Association; aged 76; died, March 17, of cerebral hemorrhage.

Martin Charles Gottschaldt, New York; University of the City of New York Medical Department, 1889; also a dentist; aged 81; died, February 25, of carcinoma of the sigmoid.

Bernard Edward Halligan, Oakland, Calif.; Creighton University School of Medicine, Omaha, 1931; on the staff of the Providence Hospital; aged 36; died, March 17, of Hodgkin's disease.

Frank E. Detrick, Quincy, Ohio; Medical College of Ohio, Cincinnati, 1906; member of the Ohio State Medical Association; aged 64; died, March 4, of epithelioma of the tongue.

Clarendon Atwood Foster, Los Angeles; Harvard Medical School, Boston, 1889; aged 77; died, March 13, in the Good Samaritan Hospital of coronary sclerosis and myocardial infarct.

Thomas Wickett, Hamilton, Ont., Canada; M.B., University of Toronto Faculty of Medicine, 1894; M.D., Trinity Medical College, Toronto, 1894; aged 77; died, January 12.

William H. Hannum, Paw Paw, W. Va.; University of the South Medical Department, Sewanee, Tenn., 1898; aged 67; died, March 4, in the Memorial Hospital, Cumberland.

John Wilson Boggess Jr., Guntersville, Ala.; Emory University School of Medicine, Atlanta, 1929; member of the Medical Association of Georgia; aged 37; died, March 15.

James Knox Hall, Lyons, Ga.; Atlanta School of Medicine, 1908; member of the Medical Association of Georgia; aged 62; died, February 25, of angina pectoris and arteriosclerosis.

Mederic Le Moyne, Montreal, Que., Canada; Laval University Medical Faculty, Montreal, 1905; Laval University Faculty of Medicine, Quebec, 1906; died, February 27.

William A. Palmour, Gainesville, Ga.; Atlanta Medical College, 1886; member of the Medical Association of Georgia; for many years mayor; aged 76; died, February 4.

Frederick W. Lang, Marine City, Mich.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1892; health officer; aged 75; died, March 20, of heart disease.

Horatio F. Chisholm, Cleveland; Chattanooga (Tenn.) Medical College, 1894; served during the World War; at one time British vice consul; aged 79; died, March 9.

Louise Krauss Ament, Siloam Springs, Ark. (licensed in Arkansas in 1908); formerly superintendent of the Lutheran Hospital, St. Louis; aged 66; died, February 11.

George Robert Seeber King ✠ Lake Butler, Fla.; College of Physicians and Surgeons, Baltimore, 1901; aged 63; died, February 28, in a hospital at Jacksonville.

Louis Blumenkranz, Chicago; Northwestern University Medical School, Chicago, 1910; aged 52; was killed, March 5, in an automobile accident near Ypsilanti, Mich.

Henry George G. Schmidt, Glendale, Calif.; Rush Medical College, Chicago, 1896; veteran of the Spanish-American and World wars; aged 68; died, February 10.

Darwin Marcel Short ✠ Owensville, Ind.; Western Reserve University School of Medicine, Cleveland, 1936; aged 36; died, February 7, of coronary thrombosis.

George John Ainley Thompson, London, Ont., Canada; Western University Faculty of Medicine, London, 1906; aged 79; died, February 16, in St. Petersburg, Fla.

Stillman B. Montique, Mount Clemens, Mich.; Hahnemann Medical College and Hospital, Chicago, 1895; aged 74; died, February 27, in St. Joseph's Hospital.

William M. Gamble, Centerville, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1891; for many years deputy county coroner; aged 72; died, February 8.

William Woodhouse Scott, Hazelridge, Man., Canada; Manitoba Medical College, 1895; aged 78; died, March 20, of coronary thrombosis and chronic nephritis.

Walter S. Scully, Columbus, Ohio; Starling Medical College, Columbus, 1897; aged 69; died, March 2, in the Grant Hospital of cardiovascular renal disease.

John Wyatt Davis ✠ Lynchburg, Va. (licensed in Virginia in 1899); served during the World War; aged 65; died, February 28, of carcinoma of the lung.

George T. Brown, Atlanta, Ga.; Southern Medical College, Atlanta, 1892; served during the World War; aged 78; died, March 2, of strangulated hernia.

Lucien Smith, Chapin, Ill.; Rush Medical College, Chicago, 1899; served during the World War; aged 65; was found dead, March 12, of coronary occlusion.

John A. Innis, Grand Rapids, Mich.; Michigan College of Medicine and Surgery, Detroit, 1895; aged 71; died, March 17, of organic disease of the heart.

Charles Abram Shultes, Preston Hollow, N. Y.; Albany Medical College, 1898; aged 72; died, February 14, of angina pectoris and essential hypertension.

Samuel Henry Scruggs, Cloutierville, La.; University of Louisville (Ky.) Medical Department, 1888; aged 78; died, February 9, of coronary occlusion.

Louis Francis Lepage, Rimouski, Que., Canada; Laval University Faculty of Medicine, Quebec, 1885; aged 82; died in February of bronchopneumonia.

Thomas L. Phillips ✠ Oneida, Tenn.; Tennessee Medical College, Knoxville, 1908; veteran of the Spanish-American War; aged 61; died, February 11.

John Ransom Kight, Ennis, Texas; Gate City Medical College, Texarkana, Ark., 1904; Birmingham Medical College, 1909; aged 64; died, February 5.

Alexander Munro, Westmount, Que., Canada; McGill University Faculty of Medicine, Montreal, 1876; L.R.C.P., London, 1877; aged 97; died, February 12.

Wilbur Carl Tobey, Spring Valley, Ohio; Eclectic Medical Institute, Cincinnati, 1904; aged 59; died, February 21, of carbon monoxide gas poisoning.

Thomas Morrow McLenahan ✠ Pittsburgh; College of Physicians and Surgeons, Baltimore, 1893; aged 74; died, February 28, of coronary occlusion.

Arthur Lewis Sneed, Kansas City, Mo.; St. Louis College of Physicians and Surgeons, 1900; aged 68; died, February 25, of cardiac decompensation.

James N. Morrison, Benson, Ariz.; Hahnemann Medical College and Hospital, Chicago, 1885; aged 87; died, February 5, of carcinoma of the colon.

Jose Antonio Samaniego, Los Angeles; University of Pennsylvania Department of Medicine, Philadelphia, 1891; aged 72; died, February 25.

R. Frank Stovall ✠ Mimbres, N. M.; University of Louisville (Ky.) Medical Department, 1884; aged 76; died, February 20, of cerebral hemorrhage.

Frank Charles Lavers, New Ross, N. S., Canada; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1891; aged 75; died, January 16.

Joseph G. Dillon, Fargo, N. D.; Hahnemann Medical College and Hospital, Chicago, 1904; aged 64; died, March 17, of cerebral thrombosis.

Thomas Joseph Kearns, New York; Cornell University Medical College, New York, 1906; aged 59; died, March 19, of coronary thrombosis.

John Wesley Lee Brannon, Atlanta, Ga.; Atlanta Medical College, 1895; aged 67; died, March 15, of multiple sclerosis and myocardial fibrosis.

Sarah A. Davis Bean, Salem, Ore.; American Medical College, St. Louis, 1890; aged 74; died, March 10, of carcinoma of the bladder.

Thomas Francis Desmond, Webster City, Iowa; Rush Medical College, Chicago, 1895; aged 75; died, February 1, of cerebral hemorrhage.

Thomas Burgess, Trenton, Ill.; Rush Medical College, Chicago, 1893; aged 72; died, February 21, in the Deaconess Hospital, St. Louis.

Frederick P. Bellinger, Council Bluffs, Iowa; Albany (N. Y.) Medical College, 1880; aged 80; died, February 19, of bronchopneumonia.

Frederick Lohrstorfer, Port Huron, Mich.; University of Michigan Department of Medicine, Ann Arbor, 1886; aged 77; died, February 17.

Victor Bourgeault, Saskatoon, Sask., Canada; Victoria University Medical Department, Coburg, Ont., 1888; aged 77; died, February 15.

John Havelock Eastwood, Peterborough, Ont., Canada; University of Toronto Faculty of Medicine, 1887; aged 76; died, February 17.

Shea Edward Prince, Shreveport, La.; College of Physicians and Surgeons, Baltimore, 1896; bank president; aged 71; died, February 6.

John Owen McQueen, Summersville, W. Va.; Kentucky School of Medicine, Louisville, 1892; aged 68; died, February 14, of pneumonia.

Walter Ross Lane, Los Angeles; University of Toronto Faculty of Medicine, Toronto, Canada, 1918; aged 47; died, February 26.

Hector McLean Paterson, Rodney, Ont., Canada; University of Toronto Faculty of Medicine, 1895; aged 69; died, February 22.

Irvine John Leatherdale, Jarvis, Ont., Canada; Western University Faculty of Medicine, London, 1915; aged 51; died, February 11.

Joseph Franklin Bond, Wabasha, Minn.; Rush Medical College, Chicago, 1885; aged 78; died, March 27, of coronary thrombosis.

Joseph F. Beakley, Shannon, Texas; College of Physicians and Surgeons, Dallas, Texas, 1907; aged 69; died in February.

Samuel Hodgens Ralston, Pittsburgh; Western Pennsylvania Medical College, Pittsburgh, 1896; aged 72; died, February 13.

Charles Gardner Child Jr., New York; Yale University School of Medicine, New Haven, Conn., 1895; aged 67; died, March 4.

Anna Elizabeth Ellsworth, Wichita, Kan.; Kansas City (Mo.) Homeopathic Medical College, 1896; aged 74; died, February 14.

Harry Thomas O'Connor, Pittsburgh; Western Pennsylvania Medical College, Pittsburgh, 1905; aged 58; died, February 23.

Isaac F. Mallett, Kansas City, Kan. (licensed in Kansas in 1901); aged 84; died, February 23, of myocarditis and hypertension.

Nellie May Johnson, Tulsa, Okla.; Hahnemann Medical College and Hospital, Chicago, 1906; aged 63; died, February 18.

George C. E. Vogler, Frederick, Md.; Baltimore Medical College, 1894; aged 76; died, February 8, of coronary thrombosis.

Ladislas Victor Stranz, Whiting, Ind.; Dunham Medical College, Chicago, 1896; aged 72; was found dead in March.

John O. Scheel, Hamilton, Ohio; Medical College of Ohio, Cincinnati, 1891; aged 83; died, February 6.

Paul Guttman, Kellnersville, Wis.; Milwaukee Medical College, 1902; aged 79; died, February 17.

Correspondence

THE LIBRARY OF SIR D'ARCY POWER

To the Editor:—I find that it is no longer safe to keep my carefully selected medical library under one roof in London at the present time, as my house has been bombed more than once. I have decided, therefore, to sell it within the next few weeks at Messrs. Sotheby's Auction Rooms at 34 New Bond Street, London W/1.

The library includes many autographed copies from my friends in the United States, notably Sir William Osler and Dr. Harvey Cushing, as well as "The Wonderful One-Hoss Shay" given me by Dr. Oliver Wendell Holmes. There is a remarkable collection of the "Regimen Sanitatis Salerni," some sixty editions in English, French and German, dating from before the time of printing until 1915, when it was last printed at Liége during the siege to show the Germans that work was being carried on as before. The object of this collection was to indicate how successive editors had enlarged on it since Arnold de Villanova first dedicated a few hundred verses to the son of William the Conqueror. It consists of a collection of receipts dealing with dietetics and various details appertaining to health, many of which have passed into the folk lore of all European countries. It opens with the statement that Dr. Quiet and Dr. Diet are the best physicians. There is also a unique copy of Dr. Bayley's treatise on eyesight, dated 1595. This small volume he signed in full when he gave it to the Lord Chief Justice of King James I. Its authorship had previously been unknown. There is also a copy of the 1552 edition of the Woman's Book. In addition to these treasures there is a very complete collection of the writings of the great English surgeons from 1565 to the present day.

D'ARCY POWER, F.R.C.S.,
53 Murray Road, Northwood,
Middlesex, England.

MEDICAL JARGON

To the Editor:—I was pleased to note that others besides myself take occasion to point out the extent to which medical jargon is used. Both Dr. Spillman (THE JOURNAL, January 18, p. 247) and Dr. Royster (ibid., March 8, p. 1022) object to confusing abbreviations and contractions, meaningless diction, misuse of words, colloquialism and errors in grammar and rhetoric in medical speech and literature. In the past, McCrae (The Use of Words, THE JOURNAL, July 10, 1915, p. 135), W. W. Keen, Thayer and others did the same.

From time to time I attempt to correct the language of students, but the blame should properly be placed on their instructors, including myself, who themselves are often careless in their speech and writing. I have gathered some of the most glaring abuses and have assembled them in an imaginary medical report as follows. It contains more than seventy-five errors or offenses. I have even included a split infinitive. I had first planned to emphasize the errors in italics, but nearly the whole composition would then have been italicized. To convey the meaning in some places phonetic spelling was needed; abbreviations are translated in the glossary.

So accustomed have physicians become to current lingo that several who read the following essay failed to note much wrong with it other than the misspelling and the absurd medical sequence.

The case was doubtful and looked pretty much like stomach flu or Coke's infection. His white cells weren't high, the polys were o.k. and the lymph glands weren't markedly enlarged. The past history was irrevelant. I did a urine on him but he only had 3 pus cells and no acid-fast organisms. The S.U.S. showed green strep and a few staph. The P.S.P., the B.U.N. and an E.K.G. were negative. The case didn't run a temperature and the blood chemistry was low. He was hospitalized and the G.U. service did a flat plate and a K.U.B. He wasn't cystoscoped and they didn't take a biopsy. The serology was negative. He wasn't luetic or a neuro. There was no question of C.P.C. or aortic regurg. A rectal and a basal rate was done on him. A C.B.C. was done for the C.P.C. None of the findings were helpful. I contacted the surgical staff but the Prof. wouldn't operate the case, because he couldn't locate the pathology. He ordered him prepped for a G.I. series but there were no X-ray changes. He put a Waggonstein down. You don't have an acute abdomen with yer white count normal, and you run a temperature and yer pulse is high. The case was clinicked.

The individual picked up an upper respiratory infection and a strep throat. It went to his left chest and his temp shot up, but I couldn't find any bugs except higher type pneumos and cock-eye of the mouth group in his sputum. He was Schicked and Dicked. I didn't want him to suddenly die on me, so I sedated him with M.S., forced fluids, put him on intravenous glucose, took him off iodides and got ready to transfuse him in case he hemorrhaged from the tissue infection.

Glossary: Coke's infection—tuberculosis.
S.U.S.—stained urinary sediment.
P.S.P.—phenolsulfonphthalein test.
B.U.N.—blood urea nitrogen.
K.U.B.—roentgenogram of the kidney, ureter, bladder.
C.P.C.—chronic passive congestion.
C.B.C.—complete blood count.
C.P.C.—clinical-pathologic conference.
M.S.—morphine sulfate.
Prepped—prepared.
Cock-eye—cocci.
Waggonstein—Wangensteen suction apparatus.

HOBART A. REIMANN, M.D., Philadelphia.

TREATMENT OF DELAYED MENSTRUATION WITH PROSTIGMINE METHYLSULFATE

To the Editor:—To the already published reports and correspondence on the treatment of delayed menstruation with prostigmine methylsulfate we wish to add our experience.

First, a brief comment regarding the communication of Dr. Alexander Winter in THE JOURNAL, Dec. 14, 1940: Although he states that he found four types of reactions, it seems to us that 3 of his patients confirmed the work of Soskin, Wachtel and Hechter, since 1 responded with a flow in forty-eight hours and 2 of those which did not so respond were pregnant. His case 4, which showed a negative Friedman reaction at the time although the patient was pregnant, is only a further confirmation.

Results with Prostigmine Methylsulfate

Patient	Age	Parity	Days Late	Prostigmine Methylsulfate	Response	Pregnant
1. J. G.	25	0	3	1/1 cc.	Positive in 16 hours	No
2. H. B.	21	1	16	1/1 cc. 2/2 cc.	Positive in 48 hours	No
3. D. B.	16	0	8	2/2 cc.	Positive in 24 hours	No
4. A. C.	25	1	8	3/1 cc.	Negative	Yes
5. (*a*) R. M.	24	0	8	1/1 cc.	Positive in 16 hours	No
5. (*b*) R. M.	24	0	9	3/1 cc.	Negative	Yes
6. M. S.	30	1	8	3/2 cc.	Negative	Probably

It will be noted that we are reporting results on 6 patients, 1 patient having been seen twice. Four responded by menstruating within forty-eight hours of the last dose, 2 having had one dose each, 1 two doses and 1 three doses. Of the 3 who did not respond, 2 are definitely pregnant clinically, and the third is in all likelihood also pregnant, although we have unfortunately lost sight of her and cannot confirm this impression. When patient 5 was not pregnant her response was

rapid. A few months later pregnancy ensued and the prostigmine did not affect her. We noted no untoward reactions to the drug and in this small group of patients, found it a very satisfactory early test for pregnancy.

MINDEL CHERNIACK, M.D.
CECIL G. SHEPS, M.D.
Winnipeg, Canada.

ZINC AND TISSUE ENZYMES

To the Editor:—In an editorial on "Zinc and Tissue Enzymes," April 19, THE JOURNAL stated that "the demonstration of the presence of zinc in the molecule is of special interest, not only because of the importance of this enzyme in the dynamics of carbon dioxide transport by the blood, but also because this is the first instance of the existence of a biologic compound containing zinc which is important to higher mammals."

Insulin was first obtained in crystalline form by Abel and his co-workers in 1926 from highly purified amorphous preparations. It has since been shown that this hormone is a protein and on hydrolysis yields amino acids, among which are tyrosine, cystine, glutamic acid, leucine, arginine, histidine, lysine, proline and phenylalanine.

Zinc has been found in the pancreas as well as in all commercial preparations of insulin examined by Scott and Fisher.

Scott and Fisher state: "The relation between zinc and insulin in the pancreas should not be overlooked. It might be pointed out that the hormone obviously exists in the pancreas in an inactive state, either as a precursor of insulin or in a combined form. It has been shown in previous communications that zinc is very closely associated with the chemistry of insulin in that the crystallization of insulin is readily effected by this substance. Furthermore, the pancreas is a comparatively rich source of zinc and contains many times the quantity of metal necessary for the crystallization of the insulin available in the gland. In the present communication it has been shown that the addition of this metal to insulin solutions materially affects the rate of action of the insulin. Because of these various facts it is not inconceivable that zinc may be one factor in the control of insulin liberation and its activity in the body."

The manner in which zinc is linked to insulin is not at present clearly understood. Sahyun, however, is of the opinion that at least two types of linkage may exist:

(1) As a single salt R $(COO)_2$ Zn

(2) As a double salt R-COO-Zn- (X)

Sahyun states that theoretically the amount of zinc that is assumed to be bound to the insulin molecule is about 0.2 mg. per thousand units.

ZOLTON T. WIRTSCHAFTER, M.D., Cleveland.

IS GLOBIN A HISTONE?

To the Editor:—In recent literature globin insulin has been erroneously referred to as a histone insulin. While there is some similarity between globin and the histones, the differences are so obvious that it is necessary to distinguish between them. For example, the average content of arginine and histidine in eight histones was 24.8 and 4.1 per cent respectively, whereas in globin it is 10.3 and 17.1 per cent (Kossel, Albrecht: The Protamines and the Histones, New York, Longmans, Green & Co., 1928). The histones yield so-called histopeptone when digested with gastric juice, which is not the case with globin. Also histones are toxic, whereas globin is nontoxic. The work by Anson and Mirsky (*J. Gen. Physiol.* **13**:469 [March] 1930) has renewed interest in the globins, and more recently Haurowitz and Waelsch (quoted by Kroner, W., in Abderhalden, Emil: Biochemisches Handlexikon, Berlin, Julius Springer, 1933, p. 234), Roche Essai sur la biochimie générale et comparée des pigments respiratoires, Paris, Masson & Cie, 1936), Hill and Holden (quoted by Kroner), Strauss and Collier (in Oppenheimer, C.: Handbuch der Biochemie des Menschen und der Tiere, ed. 2, Jena, Germany, Gustav Fischer, 1924, vol. 1, p. 668) and others have further extended Kossel's work, mostly from the physicochemical point of view. They found that globin is not a basic but a neutral protein, more similar to the albumins than to the histones, and that correspondingly native globin does not precipitate at its isoelectric point (p_H 6.8), as opposed to the histones, which are basic, e. g. thymus histone has an isoelectric point of 8.5.

LOUIS BAUMAN, M.D., New York.

THE GASTROINTESTINAL EXAMINATION

To the Editor:—Dr. Ramsay Spillman's communication published in THE JOURNAL April 19 directs attention to certain fundamental difficulties such as the tendency to consider the roentgenologist as a technician rather than as a consultant.

The matter of medical costs is, of course, another fundamental question. It would seem that the cost of poor results following improper and insufficient treatment based on incorrect or incomplete diagnosis may be found to exceed the cost of better results following proper and sufficient treatment based on more correct and complete diagnosis.

"A proper examination of the complete tract" and of the entire patient will improve results and, by so doing, reduce costs.

GREGORY CONNELL, M.D., Oshkosh, Wis.

Medical Examinations and Licensure

COMING EXAMINATIONS

BOARDS OF MEDICAL EXAMINERS

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL, May 10, page 2214.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Parts I and II. Various centers, June 23-25. Part III. Various centers, June or July. Exec. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Written. Part I.* Various centers, Nov. 1. Final date for filing application is Aug. 4. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York City.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written.* Nov. 3. Final date for filing application is Sept. 23. *Oral.* Dec. 12-13. Final date for filing application is Nov. 8. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Oral.* June, in advance of the meeting of the American Medical Association. *Written.* Oct. 20. Final date for filing application is Sept. 1. Sec., Dr. William S. Middleton, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral.* Philadelphia, June 6-7. Sec., Dr. R. Glen Spurling, 404 Brown Bldg., Louisville, Ky.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written. Part I. Group B.* Jan 3. *Oral. Part II. Groups A and B.* Atlantic City, May or June. Final date for filing application is 90 days in advance of the examination. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: *Oral.* New York, June 2; Portland, July 15; Chicago, Oct. 18. *Written.* March 7, 1942. Sec., Dr. John Green, 6830 Waterman Ave. St. Louis.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Washington, January. Final date for filing application is Nov. 1. Sec., Dr. Guy A. Caldwell, 1640 State St., New Orleans, La.

AMERICAN BOARD OF OTOLARYNGOLOGY: Chicago, Oct. 16-18. Final date for filing application is July 1. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PEDIATRICS: *Oral.* Chicago, May 18, following the Region III meeting of the American Academy of Pediatrics. Boston, Oct. 7-8, immediately following the annual meeting of the American Academy of Pediatrics. *Written.* Locally, Aug. 22. Sec., Dr. C. A. Aldrich, 707 Fullerton Ave., Chicago.

AMERICAN BOARD OF RADIOLOGY: *Oral. All groups.* Cincinnati, Sept. 19-21. Final date for filing application is Aug. 1. Sec., Dr. Byrl R. Kirklin, 102-110 Second Ave., S. W., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Part II.* Philadelphia, May 28. Sec. Dr. J. Stewart Rodman, 225 S. Fifteenth St., Philadelphia.

AMERICAN BOARD OF UROLOGY: Chicago, February. Final date for filing application is three months before date of examination. Sec., Dr. Gilbert J. Thomas, 1009 Nicollet Ave., Minneapolis.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Paternity: Right of Federal Courts to Require Blood Grouping Tests.—A child was born to the plaintiff during the pendency of her suit for maintenance against her husband, the defendant. The defendant, however, denied paternity, charged the plaintiff with adultery and brought a counterclaim for a divorce. Thereafter he asked the United States district court for the District of Columbia to order both parties to the marriage and the child to submit to blood grouping tests. The court granted the order requested and the plaintiff appealed to the United States Court of Appeals for the District of Columbia.

There was no question raised as to the admissibility in evidence of the results of the blood grouping tests as such. The value of such tests, said the Court of Appeals, as proof of nonpaternity is well known. The court relied on the Report of the Committee on Medicolegal Blood Grouping Tests of the American Medical Association (J. A. M. A. **108**:2138 [June 19] 1937) to show that such tests, although they cannot prove paternity and cannot always disprove it, can conclusively disprove paternity in a great many cases provided the tests are performed by specially qualified experts. The theory of blood grouping tests is that when the bloods of mother and child belong to certain groups there are certain groups to which the father's blood cannot belong. If the putative father's blood is in such a group he is excluded, that is, he is not the actual father. The committee recommended that where necessary, laws should be passed which would authorize courts to order blood grouping tests in cases of disputed paternity and to receive the results thereof in evidence when they exclude the putative father. Such laws, continued the court, have been enacted in several states, and the use of such tests to disprove paternity, with or without a statute expressly so authorizing, has been approved in a number of court decisions.

Formerly, said the court, federal courts could not subject plaintiffs to a physical examination except in cases arising in states in which such examinations were authorized by statute. This rule of law was changed, however, when rule 35 (*a*) of the Rules of Civil Procedure for the United States district courts was adopted, which provides:

> In an action in which the mental or physical condition of a party is in controversy, the court in which the action is pending may order him to submit to a physical or mental examination by a physician.

The court could not agree with the plaintiff's contention that this rule was unauthorized because it modified the "substantive rights" of the litigants. The rule relates exclusively to the obtaining of evidence and is therefore procedural rather than substantive. Also, the plaintiff's suggestion that the rule should be interpreted as limited in its application to actions for personal injuries did not meet with the court's approval, because such a possibility of limiting the rule must have been considered and rejected by the committee which prepared it. The language used in the rule is unlimited and so the effect of the rule should not be limited to actions of one class.

Furthermore, the court was unable to agree with the plaintiff's further contention that the "physical condition of a party" was not in controversy. According to the Century Dictionary the term "condition" includes or is synonymous with "characteristic." Clearly the characteristics of a person's blood which are expressed in terms of red and white corpuscles, or of hemoglobin, are a part of his "physical condition." In the judgment of the court, characteristics which are expressed in terms of blood groupings are likewise part of a person's "physical condition." The fact that blood grouping remains the same throughout life differentiates it from some aspects of "physical condition" but not from all. The court was also of the opinion that both the plaintiff and the child, as well as the defendant, were parties to the suit within the meaning of rule 35 (*a*). There are many instances in which a real party in interest is not named as a party in the title of a lawsuit. In the present case the suit for maintenance was as much for the infant's benefit as for the mother's. In fact, said the court, socially the infant is the most important party. If the infant is the offspring of the defendant, the tests will prove nothing and harm no one; if the defendant is not the father of the infant, then it would be unjust to prevent him from proving that fact by scientific tests. The court concluded that rule 35 (*a*) was applicable to the present case and that the district court had properly ordered the parties to the marriage and the child to submit to blood grouping tests. Judgment of the district court was therefore affirmed. —*Beach v. Beach, 114 F. (2d) 479 (1940).*

Evidence: Admissibility and Effect of Blood Grouping Tests for Determination of Nonpaternity.—The plaintiff and the defendant were married sometime prior to April 21, 1939, on which date the plaintiff, the wife, filed a petition to require her husband, the defendant, to contribute to her support. At that time she was pregnant, and in September she gave birth to a child. In January 1940 she petitioned the domestic relations court of the city of New York, family court division, Queens County, for an increase of the weekly allowance, which the defendant was paying to her, so that it would include support for the infant. At the hearing on this petition, three months after the birth of the child, the defendant for the first time charged that the plaintiff had had intercourse with another man prior to the marriage and requested a blood test to determine the child's paternity. Subsequently two blood grouping tests were made on samples of blood taken from the plaintiff, the defendant and the infant. At a later hearing on this petition before the domestic relations court, in May 1940, both parties admitted that they had had sexual relations with each other prior to their marriage and that they were married after the plaintiff had told the defendant that she was pregnant by him. The plaintiff, however, denied that she had had relations with any one else and no evidence was produced to contradict that statement. The medical expert who had made the blood grouping tests was permitted to introduce in evidence the results of these tests and to testify that it was highly improbable that the defendant was the father of the infant. The domestic relations court was therefore called on to pass on the admissibility of such testimony.

The medical expert, said the court, admittedly was an authority on the subject of blood grouping. He testified that there are two laws of heredity and two separate blood grouping tests for the determination of nonpaternity based on such laws, the M and N (Landsteiner-Levine) test and the A and B (Bernstein) test. He stated that nonconformity to the first law is considered absolute proof of nonpaternity, while nonconformity to the second law "should perhaps only be considered strong evidence that paternity is very unlikely." He testified that he had performed both tests in this case with the following results: wife—O or MN; husband—AB or N, and infant—O or N. He expressed his opinion that the results of the M and N test did not exclude the defendant as the father of the child but that the results of the A and B test showed that it was highly improbable that the defendant was the infant's father because, according to Bernstein's theory, "a parent of group AB, irrespective of the blood of the other parent, cannot have a child of group O."

The presumption of the legitimacy of a child born during wedlock, said the court, is one of the strongest and most persuasive known to the law and may be overcome only by clear and convincing evidence. Legitimacy is presumed even though the wife is proved to have at times been guilty of infidelity. The court could not agree with the defendant's contention that it should disregard all the affirmative and uncontradictory evidence and consider only the negative evidence of the results of the blood grouping tests because statutes made it mandatory to accept the results of the blood grouping tests, not simply as evidence in the case but as evidence conclusively establishing the fact of nonpaternity. Section 126-*a* of the Domestic Relations Law provides:

> Blood grouping tests. The court, on motion of the defendant, shall order the mother, her child and the defendant to submit to one or more blood grouping tests by a duly qualified physician to determine whether or not the defendant can be excluded as being the father of the child, and the results of such tests may be received in evidence but only in cases where definite exclusion is established.

Section 306-*a* of the Civil Practice Act contains substantially the same provisions and also provides that "the results of such tests may be received in evidence but only in cases where definite exclusion is established." By clear implication, said the court, the effect of this language is to substitute the medical expert for the court as the determiner of the fact of exclusion of paternity and to declare that the results of the blood grouping test shall be accepted as the fact of exclusion, because according to this language "the exclusion as to paternity is already determined before the facts establishing the exclusion are submitted in evidence." Fingerprints and photographs, continued the court, which do not require involved processes, are not even admitted as conclusive evidence. Why then should blood grouping tests be so admitted when they are based on complicated chemical processes and experimentation, made outside the court room, which involve questions of elemental and complex genetic and biologic processes and are dependent on the proper professional skill of the person carrying out the test, the careful storage and preservation of agents and reagents, the continuous retention of potencies and undiminished attraction of the substances, the vigor or power of resistance of blood serums and blood corpuscles to these chemical properties and many other elements, circumstances and conditions. While the courts are ever receptive to new facts discovered in the constant march of science and discovery, this commendable and sympathetic attitude must always be governed with a prudent and watchful guardianship to assure equal protection to all evidence from whatever source, each standing on the level plane and granite foundation of credibility, certainty and fact. Indeed, it may be seriously questioned whether the "results" of any extended medical experimentation warrant a statutory certification of the efficiency of the chemicals used and of the infallibility of their chemical reaction, or justify a statutory guarantee of the character and skill of the experimenter. In the opinion of the court the results of blood grouping tests, by reason of their involved experimentation, and expert testimony based thereon are entitled to no more credibility than any other evidence. The court suggested that the law should be amended so as to authorize the domestic relations court in its discretion to order the making of a blood grouping test but that as a prerequisite to the issuance of such an order there must be preliminary proof of nonpaternity. Also, the court believed that section 306-*a* of the Civil Practice Act should be clarified and amended so as to eliminate the implication of certainty of the results of blood grouping tests as to exclusion, if, indeed, the obvious uncertainties of these experimentations at their present stage warrant for them any enhanced place among the rules of evidence. The court concluded, therefore, that the negative expert testimony as to the results of the blood grouping tests "establishing nonpaternity" was insufficient to overcome the affirmative evidence in the case which conclusively established that the defendant was the father of the infant. Accordingly, the court ordered the defendant to pay an increased weekly allowance for support of the infant.—*Harding v. Harding, 22 N. Y. S. (2d) 810 (New York, 1940).*

Liability of Defendant in Personal Injury Claim for Unauthorized Physical Examinations of Plaintiff.—While the plaintiff was confined to her bed because of injuries resulting from a fall in the defendant store, the defendant's physician entered her room on three separate occasions and made physical examinations of her without her consent. The plaintiff subsequently sued the defendant store and its insurance carrier for trespass because of such unauthorized physical examinations and obtained a judgment in her favor. On appeal by the defendants to the court of appeals of Georgia, division 2, the court held that the judgment for the plaintiff was proper because a defendant in a personal injury claim has no absolute right to have a physical examination made of the claimant. The court concluded that the defendants, by forcing such physical examinations on the plaintiff, committed a trespass on the plaintiff for which they were liable. Judgment for the plaintiff was therefore affirmed.—*S. H. Kress & Co. v. Crouch et al.; Liberty Mut. Ins. Co. v. Same, 5 S. E. (2d) 709 (Ga., 1939).*

Society Proceedings

COMING MEETINGS

American Medical Association, Cleveland, June 2-6. Dr. Olin West, 535 North Dearborn St., Chicago, Secretary.

American Association for the Study of Allergy, Cleveland, June 2-3. Dr. J. Harvey Black, 1405 Medical Arts Bldg., Dallas, Tex., Secretary.

American Association for the Surgery of Trauma, Montreal and Montebello, Canada, May 29-31. Dr. Ralph G. Carothers, 409 Broadway, Cincinnati, Secretary.

American Association for Thoracic Surgery, Toronto, Canada, June 9-11. Dr. Richard H. Meade Jr., 2116 Pine St., Philadelphia, Secretary.

American Association of Genito-Urinary Surgeons, Hot Springs, Va., May 29-31. Dr. Charles C. Higgins, 2020 East 93d St., Cleveland, Secretary.

American Association of Medical Milk Commissions, Cleveland, June 1-2. Dr. Paul B. Cassidy, 2037 Pine St., Philadelphia, Secretary.

American Association on Mental Deficiency, Salt Lake City, June 20-24. Dr. E. Arthur Whitney, Washington Road, Elwyn, Pa., Secretary.

American Broncho-Esophagological Association, Cleveland, June 3. Dr. Paul H. Holinger, 1150 North State St., Chicago, Secretary.

American College of Chest Physicians, Cleveland, May 31-June 2. Dr. Paul H. Holinger, 500 North Dearborn St., Chicago, Secretary.

American Gynecological Society, Colorado Springs, May 26-28. Dr. Richard W. TeLinde, Johns Hopkins Hospital, Baltimore, Secretary.

American Heart Association, Cleveland, May 30-31. Dr. Howard B. Sprague, 50 West 50th Street, New York, Secretary.

American Laryngological Association, Atlantic City, May 28-30. Dr. Charles J. Imperatori, 108 East 38th St., New York, Secretary.

American Laryngological, Rhinological and Otological Society, Los Angeles, June 16-18. Dr. C. Stewart Nash, 277 Alexander St., Rochester, N. Y., Secretary.

American Medical Women's Association, Cleveland, June 1-2. Dr. Etta Gray, 649 South Olive St., Los Angeles, Secretary.

American Neurological Association, Atlantic City, N. J., June 9-11. Dr. Henry A. Riley, 117 East 72d St., New York, Secretary.

American Ophthalmological Society, Hot Springs, Va., May 29-June 1. Dr. Eugene M. Blake, 303 Whitney Ave., New Haven, Conn., Secretary.

American Orthopedic Association, Toronto, Canada, June 9-12. Dr. Charles W. Peabody, 474 Fisher Bldg., Detroit, Secretary.

American Otological Society, Atlantic City, N. J., May 26-28. Dr. Isidore Friesner, 36 East 73d St., New York, Secretary.

American Pediatric Society, Hot Springs, Va., May 22-24. Dr. Hugh McCulloch, 325 North Euclid Ave., St. Louis, Secretary.

American Proctologic Society, Cleveland, June 1-3. Dr. William H. Daniel, 1930 Wilshire Blvd., Los Angeles, Secretary.

American Radium Society, Cleveland, June 2-3. Dr. William E. Costolow, 1407 South Hope St., Los Angeles, Secretary.

American Rheumatism Association, Cleveland, June 2. Dr. A. R. Shands, Dupont Institute, Wilmington, Del., Secretary.

American Society of Clinical Pathologists, Cleveland, May 30-June 1. Dr. A. S. Giordano, 531 North Main St., South Bend, Ind., Secretary.

American Therapeutic Society, Cleveland, May 30-31. Dr. Oscar B. Hunter, 1835 Eye St. N.W., Washington, D. C., Secretary.

American Urological Association, Colorado Springs, Colo., May 19-22. Dr. Clyde L. Deming, 789 Howard Ave., New Haven, Conn., Secretary.

Association for Research in Ophthalmology, Cleveland, June 3. Dr. Conrad Berens, 35 East 70th Street, New York, Secretary.

Connecticut State Medical Society, Bridgeport, May 21-22. Dr. Creighton Barker, 258 Church St., New Haven, Secretary.

Idaho State Medical Association, Sun Valley, June 18-21. Dr. F. B. Jeppesen, 105 North 8th St., Boise, Secretary.

Illinois State Medical Society, Chicago, May 20-22. Dr. Harold M. Camp, 224 South Main St., Monmouth, Secretary.

Maine Medical Association, York Harbor, June 22-24. Dr. Frederick R. Carter, 22 Arsenal St., Portland, Secretary.

Massachusetts Medical Society, Boston, May 21-22. Dr. Robert N. Nye, 8 Fenway, Boston, Secretary.

Medical Library Association, Ann Arbor, Mich., May 29-31. Miss Anna C. Holt, 25 Shattuck St., Boston, Secretary.

Minnesota State Medical Association, St. Paul, May 26-28. Dr. B. B. Souster, 493 Lowry Medical Arts Bldg., St. Paul, Secretary.

Montana, Medical Association of, Great Falls, June 24-26. Dr. Thomas F. Walker, 206 Medical Arts Bldg., Great Falls, Secretary.

New Jersey, Medical Society of, Atlantic City, May 20-22. Dr. Alfred Stahl, 55 Lincoln Park, Newark, Secretary.

New York State Association of Public Health Laboratories, Syracuse, May 19. Miss Mary B. Kirkbride, New Scotland Ave., Albany, Secretary.

North Carolina, Medical Society of the State of, Pinehurst, May 19-21. Dr. I. H. Manning, Chapel Hill, Secretary.

North Dakota State Medical Association, Grand Forks, May 19-21. Dr. L. W. Larson, 221 Fifth St., Bismarck, Secretary.

Ohio State Medical Association, Cleveland, June 3. Mr. C. S. Nelson, 79 East State St., Columbus, Executive Secretary.

Oklahoma State Medical Association, Oklahoma City, May 19-22. Dr. L. S. Willour, 210 Plaza Court Bldg., Oklahoma City, Secretary.

Pacific Coast Oto-Ophthalmological Society, Los Angeles, May 26-29. Dr. C. Allen Dickey, 450 Sutter Street, San Francisco, Secretary.

Pacific Northwest Medical Association, Spokane, Wash., June 25-28. Dr. C. W. Countryman, 407 Riverside Ave., Spokane, Wash., Secretary.

Rhode Island Medical Society, Providence, May 28-29. Dr. Guy W. Wells, 124 Waterman St., Providence, Secretary.

Society of Surgeons of New Jersey, Plainfield, May 28. Dr. Walter B. Mount, 21 Plymouth St., Montclair, Secretary.

South Dakota State Medical Association, Mitchell, May 18-20. Dr. Clarence E. Sherwood, 107½ Egan Ave., Madison, Secretary.

Utah State Medical Association, Salt Lake City, June 12-14. Dr. D. G. Edmunds, 610 McIntyre Bldg., Salt Lake City, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1931 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Digestive Diseases, Huntington, Ind.

8:35-64 (Feb.) 1941

Intestinal Obstruction: Results of Treatment with Use of Intestinal Intubation. P. M. Glenn, Cleveland.—p. 35.
*Treatment of Massive Gastroduodenal Hemorrhage by Continuous Administration of Colloidal Aluminum Hydroxide (Report of 144 Cases). E. E. Woldman, Cleveland.—p. 39.
Effect of Orange Juice on Gastric Acidity. F. W. Claytor, W. L. Smith and E. L. Turner, Nashville, Tenn.—p. 43.
Method for Continuous Recording of Gastric pH in Situ: III. Evaluation of Efficacy of Certain Antacids. J. Flexner, New York, and M. Kniazuk, Rahway, N. J.—p. 45.
Comparison of Inhibitory Action of Different Fats and Fatty Acids Introduced into the Duodenum on Gastric Contractions. W. I. Card, London, England.—p. 47.
Further Study of Effect of Various Antacids on Hydrogen Ion Concentration of Gastric Contents. J. B. Kirsner, Chicago.—p. 53.
*Magnesium Trisilicate N. N. R.: Its Position Among Antacids Used to Treat Peptic Ulcer. M. Kraemer, Newark, N. J.—p. 56.
A One Flask Apparatus for Aluminum Hydroxide Drip Treatment of Peptic Ulcer. E. E. Woldman and V. C. Rowland, Cleveland.—p. 59.
Observations and Moving Picture Studies of Motility of Human Small Intestine. W. B. Youmans, H. F. Haney, H. P. Rush and W. Zavin, Portland, Ore.—p. 60.

Colloidal Aluminum Hydroxide for Gastroduodenal Hemorrhage.—During four years Woldman treated 144 patients with massive gastroduodenal hemorrhage by the continuous administration of colloidal aluminum hydroxide. Patients with blood streaked or occasional "coffee ground" vomitus, occult blood in the stools or rare tarry stools are not considered. There were 3 deaths among the series, or a mortality rate of 2 per cent as contrasted with 28 per cent during a similar period at the same hospital preceding continuous administration of colloidal aluminum hydroxide. The method presents certain advantages over other methods of treatment: 1. It is a harmless, nonabsorbable astringent which is capable of hastening clot formation. 2. By virtue of its antacid properties it can prevent the digestion of the clot by continuously neutralizing the excess acid in the stomach, without danger of alkalosis. 3. Because it is a gelatinous substance, it has the additional advantage of mechanically protecting the lesion. 4. As a result of its continuous administration the delicate granulation tissue formed in the process of healing is not destroyed by the accumulation of acid during the night, and thus healing is permitted. The treatment arrests the bleeding and protects the ulcer by facilitating its healing.

Magnesium Trisilicate.—Kraemer compares the neutralizing powers of various antacids used in treating peptic ulcer and discusses the disadvantages of some of them. He believes that a theoretical ideal antacid should possess the following properties: It should be inexpensive, tasteless and not astringent to the mouth mucosa. A small amount of it should neutralize a large amount of acid. It should adsorb pepsin, should be neither constipating nor laxative, should be insoluble so as not to leave the stomach too quickly, should have a prolonged action and should not stimulate a secondary acid rise. Its cation should be unabsorbable so that alkalosis cannot occur. No distressing gases should evolve after its interaction with hydrochloric acid. The author states that magnesium trisilicate N. N. R. approaches this theoretical ideal as closely as any antacid that he used. In susceptible individuals it does have a slight stimulating action on the colon, but he has not encountered the irritating watery movements which so often follow magnesium oxide or carbonate therapy. Magnesium trisilicate has a prolonged neutralizing action in vivo. Many brands offered as magnesium trisilicate do not reach the standards set down by Mutch, who reported that each of seven brands offered as magnesium trisilicate were different products. Acceptance for N. N. R. should result in a uniformity of the products offered for sale.

American Journal of Physiology, Baltimore

132:1-310 (Feb.) 1941. **Partial Index**

Effect of Hyperpyrexia on Secretion and Flow of Bile. S. L. Osborne, F. S. Grodins, L. Goldman and A. C. Ivy, Chicago.—p. 32.
Reexamination of Role of Stomach in Digestion of Carbohydrate and Protein. J. M. Beazell, Chicago.—p. 42.
Effect of Histaminase on Gastric Secretory Response to Histamine. A. J. Atkinson, A. C. Ivy and Vivian Bass, Chicago.—p. 51.
Stimulation of Nerves by Direct Currents. A. Rosenblueth, Boston.—p. 99.
Role of Adrenal Cortex and Anterior Pituitary in Diabetes Insipidus. Malvina Schweizer, R. Gaunt, Naomi Zinken and W. O. Nelson, New York and Detroit.—p. 141.
Passage of Thiocyanate and Glucose from Blood Stream into Joint Spaces. J. W. Zeller, E. G. L. Bywaters and W. Bauer, Boston.—p. 150.
Metabolism of Human Spermatozoa. J. MacLeod, New York.—p. 193.
Absorption of Carotene from Isolated Intestinal Loops. J. L. Irvin, J. Kopala and C. G. Johnston, Detroit.—p. 202.
Effect of Thiamine Hydrochloride on Muscular Dystrophy of Avitaminosis E. A. D. Holmes and Madeleine G. Pigott, Boston.—p. 211.
Prothrombin Concentration in Blood of Various Species. A. J. Quick, Milwaukee.—p. 239.
Factors in Absorption of Insulin from Alimentary Tract. R. L. Driver and J. R. Murlin, Rochester, N. Y.—p. 281.
Certain Quantitative Aspects of Pancreatic Response to Secretin. H. Greengard, I. F. Stein Jr. and A. C. Ivy, Chicago.—p. 305.

Annals of Surgery, Philadelphia

113:161-320 (Feb.) 1941

*Frontal Lobectomy in Treatment of Brain Tumors. B. Stookey, J. Scarff and M. Teitelbaum, New York.—p. 161.
*Subdural Hematoma: Study of 143 Cases Encountered During a Five Year Period. G. H. Laudig, E. J. Browder and R. A. Watson, Brooklyn.—p. 170.
Extradural Hemorrhage: Study of Forty-Four Cases. D. Munro and G. L. Maltby, Boston.—p. 192.
Extradural Venous Hemorrhage. F. L. Reichert and E. J. Morrissey, San Francisco.—p. 204.
Surgical Treatment, by Drainage, of Subacute and Chronic Putrid Abscess of the Lung. H. Neuhof, A. S. W. Touroff and A. H. Aufses, New York.—p. 209.
Obliteration of Pleural Space Following Pneumonectomy. F. J. Phillips and W. E. Adams, Chicago.—p. 221.
Russell Traction in Treatment of Fractures of the Femur: Observations on 156 Cases. K. M. Lewis, New York.—p. 226.
*Total Thyroidectomy for Heart Disease: Five Year Follow-Up Study. E. C. Cutler and S. O. Hoerr, Boston.—p. 245.
Chronic Gastric Ulcer, in Childhood, Treated Surgically. G. B. Logan and W. Walters, Rochester, Minn.—p. 260.
Hydrocele of Femoral Hernial Sac. H. J. McCorkle and H. G. Bell, San Francisco.—p. 264.
Epidermoid Carcinoma of Extremities with Reference to Lymph Node Involvement. G. W. Taylor, I. T. Nathanson and D. T. Shaw, Boston.—p. 268.
Hypoprothrombinemia: Effect of Peroral and Parenteral Administration of Synthetic Vitamin K Substitute (2-Methyl-1, 4-Naphthoquinone). L. M. Tocantins and H. W. Jones, Philadelphia.—p. 276.
Local Use of Sulfanilamide, Sulfapyridine and Sulfamethylthiazole. J. A. Key and C. J. Frankel, St. Louis.—p. 284.
Degeneration and Recovery of Autonomic Neurons Following Alcoholic Block. R. L. Merrick, St. Louis.—p. 298.

Frontal Lobectomy for Brain Tumors.—Stookey and his associates discuss their observations of frontal lobectomy for 11 gliomas of the frontal lobe, 3 of which were glioblastomas and the others astrocytomas. All the patients survived the operation and, with the exception of the 3 patients who had extensive glioblastomas, all are alive and carrying on useful lives. In 6 of the patients with astrocytoma the authors were able to excise the tumor completely and, they hope, effect a cure. In the others the tumor extended beyond the line of excision, either dorsally into the motor area or across the midline into the corpus callosum. They have shown some improvement and have made fair social adjustments. More thorough and painstaking clinical studies are essential to detect absence of the frontal lobe after its removal than necessary to determine the presence of a frontal lobe tumor. The frontal lobes are primarily association centers receiving impulses from all other parts of the brain. They are so connected that the proper function of each is dependent on impulses of a certain order and frequency reaching it through the association paths between the two. The study of the 11 patients consisted of a complete neurologic examination on admission and follow-up by social workers at regular intervals. The conclusion reached is that the patients who had their lesion completely excised, whether from the dominant or the nondominant hemisphere,

were intact with regard to their past and present life. They appeared genuine in their responses, and on nonpsychiatric investigation it would be exceedingly difficult to detect that anything had been wrong. Several of them functioned on a better level than before operation. They showed little impairment of general intelligence, planned and executed household duties competently and were able to sew, market, cook and plan for guests and the like. The common everyday performances were not slowed up. In some instances a lack of distractability was notable. There was no hesitation in putting into effect a decision, and the decision once made was maintained until executed. There was a complete return of the former emotional tone. Frigidity developed in only 1 patient. Some of the patients showed distinct evidence of a new ability to learn. None showed any loss of inhibition or any spatial disorientation. Among the patients in whom the tumor extended beyond the line of incision the results were different. The patients were shallow emotionally, listless, indifferent and lacking in initiative. Three of the patients were able to care for their homes and children and to adjust themselves mentally if no complex situation arose. They were able to talk intelligently with one or two persons but were unable to carry on a conversation with a number of people or in a crowd. The cases offer confirmatory evidence for the theory that when the lesion was completely removed the intact lobe freed from the distorted impulses due to disease of the opposite side proved able to carry on for all practical purposes as efficiently as before. On the other hand, when only partial removal was effected, though there was some improvement an irritant still remained which interfered with synchronous function of the two lobes.

Subdural Hematoma.—Laudig and his colleagues studied 143 cases of subdural hematoma encountered between July 1934 and July 1939. The cases represent all patients in whom the lesion was verified either by operation or at necropsy. The data indicate that most subdural hemorrhages arise from a laceration of a cortical vessel resulting from trauma to the head. Frequently there is a concomitant traumatic lesion of the brain, and its effects cannot be delineated from those produced by the blood clot in the subdural space. A few severely injured patients will recover after the removal of the subdural hematoma, and generally the recovery can be attributed to the prompt removal of the blood clot. The clinical course of some patients who survive the acute phase of a cerebral insult accompanied by a subdural hematoma suggests that an increase in the size of the subdural collection may occur. Repeated encephalograms, at varying intervals, of patients with a subdural collection have demonstrated a progressive shift of the ventricular system away from the lesion. This shift seems to result from an increase in the volume of the subdural collection. Whenever the diagnosis of subdural hematoma is doubtful, air studies may clarify the issue. Surgical removal of a subdural collection is the only therapy. If feasible, operation should be deferred until the acute effects of the injury to the intracranial structures have moderated. The 143 subdural hematomas were encountered among 10,265 cases of cerebral injuries. The position of a subdural hematoma did not necessarily signify the region from which the bleeding occurred. Many necropsy specimens disclosed a laceration of the temporal and/or the orbital surface of the frontal lobe associated with a sizable hematoma in the parasagittal position, yet there was no injury to the crossing veins in this region nor could attachment of the blood clot to the underlying pia-arachnoid be shown. Thirty-two patients were not operated on. They were all severely injured and died shortly after admission. Their lesions were verified at necropsy. A subdural hematoma was suspected in many, but the general physical states of the patients were such that operation was inadvisable. Sixty-six of the 111 patients operated on recovered. They have been followed by the outpatient department and their sequelae (headache, dizziness, convulsions and the like) have occurred in about the same proportion as that encountered in any group of patients who have sustained moderate to severe trauma to the brain. Three patients were committed to psychiatric care and on the average recovered in one year's time and discharged.

Total Thyroidectomy for Heart Disease.—According to Cutler and Hoerr, 57 total thyroidectomies were performed for heart disease at the Peter Bent Brigham Hospital during 1932, 1933 and 1934. Thirty-two of the patients had intractable angina pectoris and 25 some form of congestive heart failure which did not respond to the usual conservative treatment measures. Sixteen patients survived a five year period, 12 in the angina pectoris group and 4 in the group with congestive failure. All but 1 of the patients were examined by the authors. The 41 patients who did not survive were closely followed by the hospital dispensary, and the data concerning the cause of their death are based on the necropsies of 14; 7 deaths occurred in the hospital, but necropsy was refused and the data for the remaining 20 were compiled from letters from attending physicians or death certificates. There were 5 postoperative deaths; 4 of these and all but 3 of the later deaths were attributable to heart disease. The best results were obtained in patients with angina pectoris. Twenty-six of the 27 patients surviving more than six months were relieved of pain in some degree for six months or longer, and 8 of the 12 who survived for five years had sustained relief. The preoperative evidence of congestive failure or cardiac enlargement of the group was an unfavorable prognostic sign for long survival. Fifteen of the 25 patients with congestive failure lived for six months or more, and 12 of these had relief for six months or longer. Four survived five years; 3 had sustained relief and 2 of these 3 died of congestive failure in the sixth year after operation. Results were better in the group having congestive failure from chronic rheumatic valvular disease than from arteriosclerotic or hypertensive heart disease. The authors conclude that total thyroidectomy in a selected group of patients with intractable angina pectoris is a worth while therapeutic measure.

Archives of Neurology and Psychiatry, Chicago

45: 199-402 (Feb.) 1941

Experimental Studies on Headache: A. Contrast of Histamine Headache with Headache of Migraine and That Associated with Hypertension: B. Contrast of Vascular Mechanisms in Preheadache and in Headache Phenomena of Migraine. G. A. Schumacher and H. G. Wolff, New York.—p. 199.
Observations on Reflex Responses During Prolonged Periods of Human Refrigeration. T. Fay and G. W. Smith, Philadelphia.—p. 215.
Memory Defects During Metrazol Therapy. E. Ziskind, Los Angeles.—p. 223.
*Tumors of Brain in Aged Persons. F. P. Moersch, W. M. Craig and J. W. Kernohan, Rochester, Minn.—p. 235.
Mechanism of Displacement of Ventricular System in Children with Atrophic Lesions. B. Crothers and G. M. Wyatt, Boston.—p. 246.
An American Family with Pelizaeus-Merzbacher Disease. C. D. Camp and K. Löwenberg, Ann Arbor, Mich.—p. 261.
Ingestion of Large Doses of Dilantin Sodium. C. D. Aring and M. Rosenbaum, Cincinnati.—p. 265.
Elicitation of "Pseudomotor Contracture" in Tongue by Intramedullary Stimulation. K. B. Corbin, F. Harrison and C. Wigginton, Memphis, Tenn.—p. 271.
Sugar and Oxygen Metabolism of Brain During and After Insulin Hypoglycemia. J. Loman, Boston.—p. 282.
Effects of Insulin and Metrazol Therapy on Cerebrospinal Fluid Proteins. G. R. Kingsley and H. Freed, Philadelphia.—p. 289.
Role of Trauma in Amyotrophic Lateral Sclerosis. R. W. Waggoner and K. Löwenberg, Ann Arbor, Mich.—p. 296.
Lymphogranulomatosis (Hodgkin's Disease) of Nervous System. N. W. Winkelman and M. T. Moore, Philadelphia.—p. 304.
Adaptation of Sayre Apparatus for Use in Encephalography. Esther H. Read, Boston.—p. 319.
Infarction of Brain with Unilateral Circulatory Changes. C. Pilcher, T. E. Wyatt and H. M. Carney, Nashville, Tenn.—p. 321.

Tumors of Brain in Aged Persons.—From the records of the Mayo Clinic for the past twenty years, Moersch and his colleagues collected 100 cases of verified cerebral tumors among patients 60 or more years of age. The series excludes patients sent home after roentgen therapy for a supposed tumor, those for whom decompression was performed after a diagnosis of tumor but concerning whom there was no positive diagnosis at biopsy, patients who refused or were advised against operation, patients for whom palliative decompression was performed for a supposed primary or metastatic tumor and patients sent home with a diagnosis of a vascular cerebral lesion, senility, organic dementia or the like but in whom the possibility of such a tumor had to be entertained. Glioblastoma multiforme, meningioma and acoustic neuroma, in the order named, made up 82 per cent of the tumors. The cerebrum was the most common site (69 per cent) of the tumors. As a result of the advancing years, symptoms and signs were exceedingly variable,

resulting in difficult diagnostic problems. Papilledema or visual defects were of important diagnostic aid; however, their absence could not be accepted as proof that a cerebral tumor did not exist. Eighty-six of the 100 patients were operated on and the diagnosis verified by biopsy or postmortem study. The remaining 14 patients died without having had an operation, and postmortem studies verified the diagnosis. Of the 86 patients operated on 37, or 43 per cent, died postoperatively from the results of the operation, postoperative complications or the effects of a rapidly growing tumor. In many of these elderly patients operation was undertaken either in the hope of saving what vision remained or of saving life. Patients without papilledema or other evidence of increased intracranial pressure presented the most serious operative risk. The excellent operative results of younger patients compensate in a measure for the high mortality rate among the aged patients. The average length of life of the 11 patients with glioblastoma multiforme that could be followed up after operation was four months, the postoperative duration of life of the 12 patients with meningiomas was two and a half years and for the 9 with acoustic neuromas it was three and a half years. The authors state that it is possible that some of the patients whom they were unable to follow may have survived for many years. However, in this age group the natural expectancy of life is relatively short, and some of the patients undoubtedly died of causes other than those resulting from the tumor.

Archives of Ophthalmology, Chicago

25:191-390 (Feb.) 1941

Results Following Transcranial Operative Attack on Orbital Tumors. W. E. Dandy, Baltimore.—p. 191.
Treatment of Inclusion Conjunctivitis with Sulfanilamide. P. Thygeson, New York.—p. 217.
Neuromyoarterial Glomus Tumor in Eyelid. D. B. Kirby, New York.—p. 228.
Malignant Melanoma of Uveal Tract: Analysis of Forty-Two Cases. S. H. McKee, Montreal, Canada.—p. 238.
Expansion Tendency of Vitreous and Its p_H Volume Curve. L. von Sallmann, New York.—p. 243.
*Ocular Lymphogranuloma Venereum. J. P. Macnie, New York.—p. 255.
Diplobacillus of Petit in Corneal Ulceration: Report of Three Cases. A. J. Elliot, W. P. Chamberlain Jr. and I. Givner, New York.—p. 280.
Penetration of Sulfathiazole in Eye. J. G. Bellows and H. Chinn, Chicago.—p. 294.
Acute Retrobulbar Neuritis as Manifestation of Acute Localized Tissue Anoxia: Treatment with Vasodilators. W. F. Duggan, Utica, N. Y.—p. 299.
Paralysis of Convergence. K. L. Roper, Philadelphia.—p. 336.

Ocular Lymphogranuloma Venereum.—Macnie performed Frei tests on 30 patients with uveitis and keratoconjunctivitis who were suspected of having lymphogranuloma venereum. Four of these gave positive reactions when first tested. In each, pathologic conditions other than the lymphogranuloma venereum were found which could have been etiologic factors in the ocular disease. An experimental study, to confirm the fact that the ocular lesions were due to inoculation of the virus of lymphogranuloma venereum, revealed that 13 of 19 guinea pigs had a conjunctival injection with chemosis of the conjunctiva, associated with infiltration and peripheral vascularization of the cornea in from twenty-four to forty-eight hours after a suspension of mouse brain infected with the virus of lymphogranuloma venereum was injected into the anterior chamber of one eye of each animal. The intensity of the infection increased until a band of vascularized cornea 2 mm. in width surrounded the densely infiltrated central zone, through which the deeper structures of the eye could not be seen. The process reached maximal intensity in from seven to ten days and then slowly subsided. The eye in no instance returned to normal during the ten weeks of observation. The intraocular tension seemed to be low normal in all but 1 of the 13 eyes. In this eye ectasia of the cornea developed. In the 6 remaining eyes there was slight injection at the sites of fixation. This appeared immediately and subsided in from three to five days. In the corneas there also was slight infiltration and this was also gradually absorbed. The infection could not be produced in other guinea pig eyes by transfer of aqueous. Some of the same aqueous inoculated intracerebrally produced the symptoms of lymphogranuloma venereum in white mice. Infected aqueous was introduced into a tissue culture, and an antigen from this culture produced a positive Frei reaction. Tests for cutaneous sensitivity in 9 infected guinea pigs yielded four positive, two doubtful and three negative results. Smears from the iris and posterior surface of the cornea of infected guinea pig eyes, when stained according to the Giemsa method, showed structures of varying size resembling the elementary and initial bodies of trachoma. The author concludes that the virus of lymphogranuloma venereum is one of the causes of the oculoglandular syndrome of Parinaud and may be a cause of other ocular diseases, particularly of inflammations of the uveal tract. It should be considered as a possible causal factor in ocular infections of unknown etiology.

Arkansas Medical Society Journal, Fort Smith

37:183-206 (Feb.) 1941

Prevention of Abdominal Adhesions. J. K. Donaldson, Little Rock.—p. 183.
Brief Comparison of Various Suture Materials. J. B. Wharton Jr., El Dorado.—p. 187.

Bulletin New York Academy of Medicine, New York

17:83-162 (Feb.) 1941

Humanism and Science. A. Gregg, New York.—p. 83.
Treatment of Bacterial Meningitis. Hattie E. Alexander, New York.—p. 100.
Newer Knowledge of Vitamin K. W. D. Andrus, New York.—p. 116.
Massive Dose Chemotherapy by Intravenous Drip Method. H. T. Hyman, New York.—p. 135.

Canadian Medical Association Journal, Montreal

44:107-216 (Feb.) 1941

Indications for Surgery in Pulmonary Tuberculosis. R. Robertson, Muskoka, Ont.—p. 107.
*Some Factors in Causation of Intimal Hemorrhages and in Precipitation of Coronary Thrombi. J. C. Paterson, Ottawa, Ont.—p. 114.
Treatment of Lichen Planus with Vitamin B Complex. J. F. Burgess, Montreal.—p. 120.
Present Status of Treatment of Coronary Artery Disease. R. S. Stevens, Ottawa, Ont.—p. 124.
Comparative Study of Three Spinal Anesthetic Agents: New Technic for Nupercaine. J. H. Gifford, Jersey City, N. J., and F. A. H. Wilkinson, Montreal.—p. 128.
Pitfalls in Gynecologic Diagnosis. W. G. Cosbie, Toronto.—p. 133.
Gonococcic Pelvic Inflammation. J. C. Goodwin, Toronto.—p. 136.
Benign Lesions of Cervix. G. L. Watt, Toronto.—p. 141.
Pyelonephritis of Pregnancy. W. P. Hogarth, Fort William, Ont.—p. 145.
Kidney Tumors (Analysis of Series of 118 Cases). E. Smith and A. Young, Montreal.—p. 149.
Congenital Anomalies of Urinary Tract, Underlying Cause in Many Urinary Infections in Children. A. B. Hawthorne, Montreal.—p. 152.
Value of Remedial Exercises in Treatment. G. H. Fisk, Montreal.—p. 154.
Atrophic Rhinitis or Ozena in Children. J. G. Strachan, Toronto.—p. 158.
*Combined Artificial Fever, Chemotherapy and Vaccinotherapy in Neurosyphilis. A. Marin, Montreal.—p. 161.
Eczematous Dermatitis of Contact Type. S. E. Grimes, Ottawa, Ont.—p. 164.
Regional Ileitis. W. L. Graham, Vancouver, B. C.—p. 168.
Effect of Vernix Caseosa on Bacteria. H. Lubinski and B. Benjamin, Montreal.—p. 171.

Intimal Hemorrhages and Precipitation of Coronary Thrombi.—Paterson reviews the evidence which supports the hypothesis that the common cause of coronary thrombosis is intimal hemorrhage. The hemorrhages result from the rupture of capillaries which are derived from the coronary lumen. Increased intracapillary pressure, due to persistent hypertension, is a major factor in the formation of intimal hemorrhages and in the precipitation of coronary thrombi. Transient hypertension following violent physical exertion or emotion will have a similar effect, and therefore these activities should be avoided by patients with coronary artery disease. From a study of the relation of vitamin C deficiency to the incidence of coronary thrombosis and the available evidence it appears that increased capillary fragility due to an inadequate concentration of this vitamin in the blood may be a causative factor in some cases of coronary thrombosis. Therefore such patients should be assured of an adequate vitamin C intake. Calcification of atherosclerotic plaques may be a protection against intimal hemorrhages and coronary thrombosis, and an ample calcium intake is therefore also recommended. The evidence shows that hypertension (persistent or transient), increased capillary fragility due to avitaminosis C and inadequate calcification of atheromatous foci are concerned in the formation of intimal hemorrhages.

Artificial Fever, Chemotherapy and Vaccinotherapy for Neurosyphilis.—From October 1937 to January 1940 Marin treated 220 patients suffering from neurosyphilis, chorea, multiple sclerosis, gonorrhea and other diseases with a combination of vaccine, chemotherapy and hyperpyrexia. His treatment consisted of an injection at 7 a. m. (for example on Monday) of tryparsamide followed immediately by a session of five hours of artificial fever at 105 F. On Wednesday and Friday the patient is given an injection of fever-producing vaccine (such as pyrifer) and of bismuth. Vaccines give an average temperature of 104 F. This procedure is repeated for ten weeks, after which the patient is treated at the outpatient clinic with pentavalents or neoarsphenamine and bismuth compounds. The 220 patients received 1,318 treatments of about five hours each in a total of 7,568 hours. There was 1 death. Among the group there were 137 patients with neurosyphilis, and 89 of these had fifty hours of artificial fever combined with vaccines and chemotherapy. Far from being debilitating, the combined therapy produced general improvement. The majority of the working asymptomatic syphilitic persons could carry on their occupation. Restlessness, insomnia and headaches were lessened or disappeared during the hyperpyrexia or shortly afterward. The weight of many emaciated patients increased. In tabes, lightning pains and vomiting decreased or disappeared. There was improvement in muscular strength or in gait. In dementia paralytica the remissions (complete or incomplete) usually occurred between the fifth and the tenth session of pyretotherapy. In 3 there was a "flare-up" of the delirium by the end of the fiftieth hour; 2 of these had complete remissions during the next two months. The percentage of full remissions (return to former occupation) among the dementia paralytica patients was 54. Of the 89 patients, 39 are eliminated from serologic study; 18 have been under treatment for less than six months and 21 discontinued treatment at the outpatient clinic, followed it irregularly or refused to have a third lumbar puncture (one before the combined treatment, one after and one after adequate outpatient chemotherapy). The 50 patients were under treatment for from six to eighteen months. Although eighteen months of treatment is not long in cases of neurosyphilis, and six months is almost insignificant, the patients are considered as one group. Before treatment there were 68 per cent of strongly positive fluids as compared with 26 per cent after. There are now 22 per cent of negative fluids, whereas there were none before treatment was started. The weakly positive and doubtful fluids, which at the onset were 16 per cent, are now 30 per cent. It is logical to expect that many of these will soon increase the proportion of the negative group. The 11 patients whose spinal fluid became negative did not all present the same degree of abnormality at the onset, nor did they respond evenly to the treatment.

Illinois Medical Journal, Chicago

79:89-176 (Feb.) 1941

Pneumonia: Its Diagnosis and Treatment. W. D. Sutliff, New York.—p. 111.
Need for and Organization of Postgraduate Medical Education as Part of a State Educational Program. J. C. Litzenberg, Minneapolis.—p. 117.
Control of Tuberculosis. H. V. Hullerman, Springfield.—p. 126.
Cardiovascular and Systemic Morbidity Following Hyperpyrexia in Central Nervous System Syphilis. A. A. Lieberman and C. J. Katz, Elgin.—p. 132.
Modification of Use of Typhoid Vaccine in Production of Hyperpyrexia. J. Weinberg and H. H. Goldstein, Chicago.—p. 139.
Surgery in Syphilitics, with Study of Cases in Mental Hospitals: One Hundred and Four Cases Reported. G. A. Wiltrakis, Peoria; A. V. Partipilo and L. Olsman, Chicago.—p. 141.
Role of Neurosyphilis in Disturbances of "Anal Sphincter Tone." B. L. Greene, Elgin, and L. H. Block, Chicago.—p. 144.
Relationship of County Secretary to the Educational Committee. C. P. Blair, Monmouth.—p. 148.
How the Public Health Nurse Works with the Medical Profession. Grace S. Wightman and M. Louise Nicol, Springfield.—p. 151.
Antipneumococcus Rabbit Serum: Its Relation to Case Fatality Rate in Lobar Pneumonia in the Cook County Hospital. F. B. Kelly, E. M. Barton and B. Lipschultz, Chicago.—p. 154.
Peridural Anesthesia in General Surgery. T. M. Larkowski, Chicago.—p. 158.
Unusual Twin Pregnancy. C. L. Noggle and L. E. Day, Chicago.—p. 161.
Scope of Prostatic Resection. P. F. Olson, Dubuque, Iowa.—p. 161.
Environment and the Patient. R. N. Hedges, Chicago.—p. 163.
Unusual Autopsy Findings in Case of Brucellosis Treated with Sulfanilamide. W. L. Winters, S. P. Waud and A. C. Bach, Chicago.—p. 167.

Indiana State Medical Assn. Journal, Indianapolis

34:57-110 (Feb.) 1941

The Heart in Middle Life. G. W. Willison, Evansville.—p. 57.
A Year of Anesthesia at Indianapolis City Hospital. W. B. Adams, Indianapolis.—p. 61.
Agranulocytic Angina. R. U. Leser, Indianapolis.—p. 64.
Treatment of Comminuted Fractures of Lower Leg. W. D. Davidson, Evansville.—p. 66.
Complications of Pregnancy and Their Treatment. W. A. Shuck, Madison.—p. 69.
Clinical Significance and Treatment of States Associated with Low Basal Metabolic Rates. H. F. Dunlap, Indianapolis.—p. 73.

Journal of Lab. and Clinical Medicine, St. Louis

26:757-918 (Feb.) 1941. **Partial Index**

Familial Nonreaginic Food Allergy as Predisposing Cause of Common Cold. A. F. Coca, Oradell, N. J.—p. 757.
Determination of Blood Velocity by Lobeline. F. V. Piccione and L. J. Boyd, New York.—p. 766.
*Toxic Hepatitis Due to Sulfanilamide: Report of Fatal Case with Histopathologic Findings in Liver. S. S. Berger and H. S. Applebaum, Cleveland.—p. 785.
Evaluation of Combined Effects of Sulfapyridine and Barbiturates in Treatment of Pneumonia. W. L. M. King and H. J. Moersch, Rochester, Minn.—p. 793.
Incidence of Bacteremia in Patients with Dental Disease. M. Murray and F. Moosnick, Cincinnati.—p. 801.
Histamine Treatment of Allergic Diseases: I. Asthma and Vasomotor Rhinitis. L. Farmer, New York.—p. 802.
Investigations on Reticuloendothelial Function of Cancer Patients. K. Stern, New York.—p. 809.
Vitamin K Activity of 2-Methyl-1, 4-Naphthoquinone and 4-Amino-2-Methyl-1-Naphthol in Hypoprothrombinemia. E. A. Sharp, E. C. Vonder Heide and W. H. Good, Detroit.—p. 818.
Meat Extractives in Studies of Gastric Function. R. S. Fisher and F. L. Apperly, Richmond, Va.—p. 823.
Further Observations on Role of Diet in Etiology and Treatment of Spontaneous Hypoglycemia. L. W. Swanson and J. A. Greene, Iowa City.—p. 828.
Effect of Copper and Iron on Hemoglobin Regeneration. W. M. Fowler and Adelaide P. Barer, Iowa City.—p. 832.

Toxic Hepatitis Due to Sulfanilamide.—Berger and Applebaum report the second fatal case of subacute atrophy of the liver to be cited in the English literature. Permission for necropsy was not obtained, but through a puncture wound several small segments of liver tissue were obtained and the diagnosis was extensive necrosis and replacement fibrosis, with probable toxic hepatitis, subacute yellow atrophy and beginning toxic cirrhosis. From clinical observations the patient apparently had a normal liver by the usual standards of examination, until he began to take sulfanilamide. No other drug was taken, and there was no history of previous contact with hepatic irritants. He ingested 6.6 Gm. of sulfanilamide over three days, and six weeks later 20 Gm. over ten days. This was promptly followed by gastric upset, with nausea and vomiting, and about four days after the drug was discontinued jaundice, enlarged liver and spleen and later ascites developed. A reasonable if not a certain causal relationship can be accepted between the drug and the hepatitis. Further presumptive evidence may be had from the patient's statement that gastric disturbance promptly followed the taking of the tablets and promptly disappeared when discontinued. The case differs from the two fatal cases of hepatitis reported by Bannick, Brown and Foster in that they believed that their patients might possibly have suffered from preexisting liver damage. It differs also from Garvin's fatal case, in which the hepatitis was complicated by exfoliative dermatitis and anemia, as there were no cutaneous lesions, appreciable anemia or evidence of previous hepatic damage. The possibility of a malignant condition suggested itself, but its absence was ruled out by the enlarged readily palpable spleen on the first admission, and the differential diagnosis in favor of hepatitis and cirrhosis and finally subacute atrophy (necrosis) of the liver was made. This impression was supported by a definite history of sulfanilamide ingestion, absence of malignant cells in the ascitic fluid, the negative peritoneoscopic examination as regards tumors, the interruption in the complete obstruction (evidenced by occasional hydrobilirubin in the stool and urobilinogen in the urine) and the subsequent decrease in the size of the liver. The experience confirms the view of Garvin and others that sulfanilamide should be listed among the agents which may cause severe hepatic damage and emphasizes the fact that it may be fatal. The danger of the indiscriminate use of sulfanilamide thus becomes obvious.

Journal of Nat. Cancer Inst., Washington, D. C.

1:129-276 (Oct.) 1940. **Partial Index**

Effect of Carcinogens on Small Free-Living Organisms: I. Eberthella Typhi. R. R. Spencer and M. B. Melroy, Washington, D. C.—p. 129.
Breast Cancer in Mice as Influenced by Nursing. J. J. Bittner, Bar Harbor, Maine.—p. 155.
Significance of Hormones in Origin of Cancer. L. Loeb, St. Louis.—p. 169.
Complement Fixing Capacity of Rabbit-Papilloma-Virus Protein. W. R. Bryan, Washington, D. C.; Dorothy W. Beard and J. W. Beard, Durham, N. C.—p. 197.
Biologic Testing of Carcinogens: I. Subcutaneous Injection Technic. M. B. Shimkin, Washington, D. C.—p. 211.
Id.: II. Pulmonary Tumor Induction Technic. H. B. Andervont and M. B. Shimkin, Washington, D. C.—p. 225.
Squamous Cell Carcinoma and Other Lesions of Forestomach in Mice, Following Oral Administration of 20-Methylcholanthrene and 1,2,5,6-Dibenzanthracene: Preliminary Report. E. Lorenz and H. L. Stewart, Washington, D. C.—p. 273.

Journal of Neurophysiology, Springfield, Ill.

4:1-134 (Jan.) 1941

Observations on Cortical Somatic Sensory Mechanisms of Cat and Monkey. W. H. Marshall, C. N. Woolsey and P. Bard, Baltimore.—p. 1.
Observations on Subcortical Somatic Sensory Mechanisms of Cats Under Nembutal Anesthesia. W. H. Marshall, Baltimore.—p. 25.
Pupillodilator Reactions to Sciatic and Diencephalic Stimulation: Comparative Study in Cat and Monkey. E. A. Weinstein, New Haven, Conn., and M. B. Bender, New York.—p. 44.
Flicker Potentials and Alpha Rhythm in Man. J. Toman, Princeton, N. J.—p. 51.
Effects of Prefrontal Lobotomy on Depressed Patients. P. Worchel and J. G. Lyerly, Chattahoochee, Fla.—p. 62.
Sympathetic Preganglionic Outflow to Limbs of Monkeys. D. Sheehan and A. S. Marrazzi, New York.—p. 68.
Recovery of Responsiveness in Motor and Sensory Fibers During Relative Refractory Period. E. T. von Brücke, Marie Early and A. Forbes, Boston.—p. 80.
Technic and Evaluation of Electroencephalogram. Pauline A. Davis, Boston.—p. 92.
Activity in Neurons of Bulbospinal Correlation System. D. P. C. Lloyd, New York.—p. 115.

Maine Medical Association Journal, Portland

32:27-50 (Feb.) 1941

Problems in Surgery of Intestine. E. E. O'Donnell, Portland.—p. 27.
Tuberculosis Case Finding with Reference to General Hospitals. L. Adams, Greenwood Mountain.—p. 31.
Rorschach Test in Diagnosis of Psychoses and Psychoneuroses. A. A. Weil, Augusta.—p. 35.

Military Surgeon, Washington, D. C.

88:97-226 (Feb.) 1941

*Prevention and Treatment of Shock in Combat Zone. D. B. Kendrick Jr.—p. 97.
Discussion of Prevention and Treatment of Shock in Combat Zone. J. A. Mattison.—p. 114.
*Blood Plasma. J. Elliott, W. L. Tatum and G. F. Busby.—p. 118.
Discussion of Blood and Plasma Transfusions. M. E. Hubbard.—p. 125.
New Facts on Blood Groups, with Special Reference to Military Purposes. R. B. H. Gradwohl.—p. 128.
Story of Blood Transfusion: Its Civilian and Military History. J. Hirsh.—p. 143.
Disease in Naval Warfare. J. C. Adams.—p. 158.
System of Records for Hospital Clearing Station. D. G. Friend and H. S. Reid.—p. 163.
Calcium and Phosphorus in Relation to Oral Pathology. W. A. Musgrave.—p. 169.
Repair of Facial Defects with Prosthesis Using Latex Compound. A. H. Bulbulian.—p. 179.
Hypertrophy of Genitalia: Case Report. C. Ferguson.—p. 182.
Detection of Iodides in Urine by Orthotolidine Test. C. C. Gill.—p. 184.
Surgeon Benjamin King: Genesis of the United States Soldiers' Home. J. M. Phalen.—p. 187.

Prevention and Treatment of Shock in Combat Zone.—Kendrick suggests the following preventive and treatment measures for shock which can be initiated early at the combat zone: At the battalion aid station hemorrhage can be controlled by the application of tight fitting dressings, packing the wounds with sterile gauze, ligating large bleeding points or by the application of tourniquets only when essential. The time of application should be noted on the emergency medical tag. If a sucking wound of the chest is found it should be closed by packing or immediate suturing. Fractures and extremities should be well splinted before the patient is moved. Bayonets, rifles, lumber and rolled blankets are poor substitutes for splints. Men with fractured vertebrae should be transported in hyperextension without an attempt at reduction. From ¼ to ½ grain (0.016 to 0.03 Gm.) of morphine sulfate should be given to control pain. A barbiturate, sodium amytal or pentobarbital sodium in approximately 3 grain (0.2 Gm.) doses should also be given orally. The administration of the drugs should be recorded on the emergency medical tag. Morphine should be withheld from patients with head injuries. Wounded men with no trauma to the abdomen should be given water when it is available. If possible from 50 to 100 cc. of concentrated plasma should be given the severely injured. Its injection at this time will do more to reduce the mortality from shock than any other single factor. Exposure to cold can be prevented by covering patients with blankets. Three blankets can be folded on a litter so as to provide four folds above and four beneath the patient. The supplying of blankets to the battalion aid station is the function of a collecting company and should be continuous. As little clothing as possible should be removed while dressings are applied, to prevent undue exposure. Infection in wounds is best prevented by early chemotherapeusis; therefore a sulfonamide compound in adequate dosage should be given orally and as early as possible and its concentration maintained by repeated doses at intervals of four hours. The effect of the drug is directly proportional to its concentration up to a therapeutic level. Shock is no contraindication to its administration. Dressings should be checked at collecting stations for severe hemorrhages, which, if present, should be controlled. A tourniquet, if applied at the aid station, should be released and reapplied only if necessary. If the patient needs fluids, 100 cc. of concentrated plasma should be injected intravenously. Antitetanic therapy and polyvalent antiperfringens serum should be given subcutaneously. Splints should be checked for proper application and comfort. Hot drinks (cocoa, coffee and tea) should be available except for those patients with abdominal injuries. When the foregoing measures have been performed, the severely injured should be placed in heated ambulances and evacuated to the casualty clearing station. Here wet clothing should be replaced and the patients placed in shock beds, the heads of which are elevated. Heat should be applied by hot water bottles to the axilla and groin. From 250 to 500 cc. of plasma of normal concentration should be given. The amount depends on the response of the patient. A sufficient quantity should be injected to prevent shock. High concentrations of oxygen should be administered by the B. L. B. (Boothby, Lovelace and Bulbulian) oxygen face mask. Hot drinks are indicated except for patients with abdominal injuries. Barbiturate medication should be repeated, especially when operative procedures are to be performed. Morphine sulfate may be repeated. When a surgical hospital or mobile surgical unit is attached to the casualty clearing station the severely injured who require surgical intervention should be operated on as soon as treatment has been effected. These units should carry trained anesthetists. The prognosis of certain types of injury (penetrating wounds of the chest, brain, abdomen and joints) depends and requires early attention before shock and infection ensue.

Blood Plasma.—Elliott and his associates have prepared blood plasma in large quantities in an entirely closed system. A 600 cc. transfuso-vac has been replaced by a 300 cc. centri-vac containing 35 cc. of anticoagulant. Two bottles of blood can be collected from each donor. The blood is collected in a vacuum, and contamination can occur only if the operator is careless in handling the needles. The sealed bottles of blood still under vacuum are stored at refrigerator temperature for one or two days, after which they are centrifugated for about one hour at 2,000 revolutions per minute. After centrifugation they are again refrigerated for a few hours so that the few cells that swirl in the supernatant plasma as the centrifuge comes to rest settle out. The protecting rubber diaphragm is removed from the centri-vacs, the rubber stoppers are sterilized, an air filter is inserted into one of the indentations and a valve is connected with the rubber tubing, which in turn is connected with a long aspirating needle and it is passed through the X mark in the rubber stopper of a plasma-vac. The long needle is thrust through the second indentation of the centri-vac and the plasma is aspirated into the plasma-vac. The second bottle is prepared in a similar manner and the plasma is aspirated. Merthiolate may be added in sufficient quantity so that the final concentration is 1:10,000, by aspirating the desired quantity of 1 per cent merthiolate from a sterile

15 cc. centrifuge tube between aspirations. In the event of war the great need for plasma cannot be supplied by one center. In the United States local voluntary donors can be enlisted through local Red Cross chapters. The machinery has already been set up. Blood can be collected in many hospitals and converted into plasma at central points. Bottles of blood can be shipped by mail, plane and bus and converted into plasma without the loss of a single bottle. The use of plasma as a substitute for whole blood has passed through the experimental stage and its effectiveness in shock, hemorrhage, burns and the hypoproteinemic state is now recognized. Its usefulness during war is being proved in the present conflict. With the technic presented, the authors believe that it should be possible for many institutions to enter into any program for the preparation of plasma in large quantities.

Minnesota Medicine, St. Paul

24:71-144 (Feb.) 1941

Malmros-Hedvall Lesions of Pulmonary Tuberculosis in Adults. A. T. Laird, Nopeming.—p. 71.
Vollmer Patch Test and Mantoux Test. F. M. Feldman, Rochester, in collaboration with A. F. Risser and E. R. Schwartz, Stewartville.—p. 76.
Pneumonia in Rural Communities. R. V. Williams, Rushford.—p. 78.
Carcinoma of Stomach. J. T. Priestley, Rochester.—p. 81.
Prognosis Following Palliative Resection for Carcinoma of Sigmoid. C. W. Mayo and J. M. Miller, Rochester.—p. 84.
Starting the Practice of Medicine. J. M. Hayes, Minneapolis.—p. 86.
Present Surgical Management of Esophageal Diverticula with Presentation of New (?) Method. S. R. Maxeiner, Minneapolis.—p. 91.
Postmortem Findings in Cases of Diabetes. T. J. Dry and C. F. Tessmer, Rochester.—p. 96.
*Brucellosis. I. Fisher, Ceylon.—p. 106.
Seminal Vesiculitis. R. F. Hedin, Red Wing.—p. 108.

Brucellosis.—Fisher encountered 10 cases of brucellosis within eighteen months. He used sulfanilamide for the treatment of 8 and obtained good results. For the remaining 2 patients triple typhoid vaccine was also used after eight to ten days of sulfanilamide treatment. After two bouts of fever these patients were again given sulfanilamide. The temperature soon dropped to normal and remained there. In 1 patient, sulfapyridine was substituted for sulfanilamide and used in the same manner as in the treatment of pneumonia. The temperature became normal within thirty-six hours and remained there. Sulfanilamide had been used for eight days previously without any change in temperature. Two patients relapsed; in 1 relapse occurred twice, two and three weeks, respectively, after discontinuing sulfanilamide. The sulfanilamide had been used for two weeks during each course of treatment. Relapse in the second case was controlled more easily. Both patients eventually became afebrile. Eight of the 10 patients handled livestock, the 2 others neither handled livestock nor drank milk, and the source of their infection could not be traced. More public health measures may be necessary to curb a further increase of this disease.

New England Journal of Medicine, Boston

224:179-220 (Jan. 30) 1941

*Exploration and Division of Femoral and Iliac Veins in Treatment of Thrombophlebitis of Leg. J. Homans, Boston.—p. 179.
Sarcoidosis with Bronchial Involvement: Report of Case with Bronchoscopic and Pathologic Observations. E. B. Benedict and B. Castleman, Boston.—p. 186.
Peripheral Arterial Embolism: Discussion of Postembolic Vascular Changes and Their Relation to Restoration of Circulation in Peripheral Embolism. R. R. Linton, Brookline, Mass.—p. 189.
Comparative Prothrombin Responses to Vitamin K and Several of Its Substitutes in Case of Nontropical Sprue. J. G. Allen, Chicago.—p. 195.
*Symptomatic Treatment of Functional Dysmenorrhea by Amphetamine (Benzedrine) Sulfate. Z. Eileen Taylor, Winchester, Mass.—p. 197.
Medical Aspects of Obstetrics. T. R. Goethals, Boston.—p. 200.

Division of Femoral and Iliac Veins for Thrombophlebitis.—Homans states that bland, nonobstructing thrombosis of the leg, whether occurring in active life or during convalescence or invalidism in bed and whether confined to the venous plexuses among the muscles below the knee or also occupying the femoral and even the iliac veins, is a frequent source of pulmonary embolism. This type of thrombosis, though difficult to identify, can often be diagnosed, whether or not embolism has occurred, by a combination of clinical symptoms with discomfort behind the knee on forced dorsiflexion of the foot. Conservative treatment of the disorder is usually justified, but, when embolism has occurred or when symptoms and signs have recurred at least once, exploration and division of the femoral vein are advisable. Exploration and division of the femoral and iliac veins may also be indicated for peripheral vasospasm, especially when the vein has been the seat of a previous thrombophlebitis, and repeated once or twice in an effort to guard against recurrence of pulmonary embolism. Division of the superficial femoral vein, in the presence of a bland nonobstructing thrombosis below the knee, is rapidly curative. It does not lead to swelling and cyanosis of the leg. Division of the common femoral and profunda veins for a bland nonobstructive thrombosis that occupies the femoral vein causes considerable edema and cyanosis. Division of the superficial femoral, common femoral or even common iliac vein following an old canalized thrombophlebitis causes little disturbance and may, by relief of reflex vasospasm and curtailment of backflow, benefit the venous circulation.

Amphetamine Sulfate for Functional Dysmenorrhea.—Thinking that a therapeutic agent causing relaxation of smooth muscle and increasing the sense of well being might be of value in the treatment of functional dysmenorrhea, Taylor tried amphetamine sulfate. She has used amphetamine sulfate successfully for dysmenorrhea in her practice for three years for 34 women with dysmenorrhea with no underlying responsible gynecologic disorder. Glandular dysfunction and organic lesions, when present, were treated appropriately before treatment with amphetamine sulfate was begun. The patients were given three trial doses of 2.5, 5 and 10 mg. of the drug during intermenstrual periods. A sufficient quantity of the drug for the next menstrual period was then given. No comment on the nature of the medication was made. The patients were instructed to take one 10 mg. tablet of amphetamine sulfate before breakfast for two days before the expected period and the day of the period. The dose was to be repeated if pain was not relieved. They were not permitted to take more than 20 mg. a day, or to take the second tablet after 2 p. m., without permission. The treatment lasted three or four days, depending on the expected duration of symptoms. On alternate periods the patients were unknowingly given placebos or analgesics (salicylates or codeine). No leading questions were asked, but the patients were instructed to describe the symptoms at each menstrual period. Among the 34 patients there were only two untoward reactions. The first was a manic phase induced by a test dose of 5 mg. of the drug in a patient who later was proved to have a manic depressive psychosis. The second was in a patient with anxiety neurosis who refused medication because palpitation occurred with the test dose. There was no indication of tolerance or habit formation. Amphetamine sulfate appeared not to have any effect on the amount of menstrual flow. The drug relieved pain, fatigue and depression of patients in whom other measures had failed. This was confirmed by the substitution of placebos or other medication during alternate periods when symptoms recurred. Of the patients, 40 per cent obtained complete relief and an equal number moderate relief. In 16 per cent the apparent benefit of the drug was not maintained, and 2 patients reported that they were worse under medication. It is concluded that amphetamine sulfate is valuable for treating dysmenorrhea and that it is well adapted to ambulatory patients.

New Orleans Medical and Surgical Journal

93:387-438 (Feb.) 1941

Primary Carcinoma of Lung. A. Ochsner and M. DeBakey, New Orleans.—p. 387.
Treatment of Chronic Infectious Arthritis. M. W. Matthews, Shreveport, La.—p. 396.
Clinical and Hematologic Studies in Some Blood Dyscrasias. C. J. Tripoli and D. E. Fader, New Orleans.—p. 402.
Application and Interpretation of Friedman Modification of Aschheim-Zondek Test. A. V. Friedrichs, New Orleans.—p. 408.
Diagnosis and Treatment of Sterility. W. A. Dial, Baton Rouge.—p. 413.
Use of Sulfanilamide in Peritonitis. M. L. Michel, New Orleans.—p. 419.
Dr. Thomas Hunt. R. M. Landry, New Orleans.—p. 426.

Public Health Reports, Washington, D. C.

56:129-166 (Jan. 24) 1941

Study of Effect of Lead Arsenate Exposure on Orchardists and on Consumers of Sprayed Fruit. P. A. Neal, W. C. Dreessen, T. I. Edwards, W. H. Reinhart, S. H. Webster, H. T. Castberg and L. T. Fairhall.—p. 129.
*Cancer in the Mentally Ill. S. Peller and C. S. Stephenson.—p. 132.
An Institutional Outbreak of Pneumonitis: III. Histopathology in Man and Rhesus Monkeys in Pneumonitis Due to Virus of Q Fever. R. D. Lillie, T. L. Perrin and C. Armstrong.—p. 149.

56:167-210 (Jan. 31) 1941

Principal Provisions of Smallpox Vaccination Laws and Regulations in the United States. W. Fowler.—p. 167.
Procedure for the Maintenance of Housing Standards in Milwaukee. C. L. Senn.—p. 189.

Cancer in the Mentally Ill.—According to Peller and Stephenson, 9,503 patients were admitted to St. Elizabeths Hospital, Washington, D. C., from 1930 through 1939. During this time 4,529 patients were discharged and 2,665 died. The residence of all those who died ranged from a few weeks to almost fifty years. On the average 5,395 patients were on the rolls. During the ten years under consideration 227 patients with cancer were discovered, 189 of whom died in the hospital, 7 were discharged and 31 were still alive on Dec. 31, 1939. A postmortem examination was done of 155 of the cancer deaths. The distribution of the fatal primary cancers, according to site, does not reveal definite deviations from the expectancy. The percentage of cutaneous and lip cancer was much smaller than expected. The ratio of cancer deaths for the period (7.1 per cent) is low; the ratio for the years 1938 to 1940 is higher than for the years 1930 to 1937. The cancer mortality of the white psychotic patients (69 were Negroes) from the area is significantly lower than that of the corresponding white population of New York City. Two thirds of the patients were born in the South; one third were born in the North but lived in the South before admission to the hospital. For the patients born in the South and residing there before admission the mortality was 38.3 per cent less than the expectancy, while for those born farther north but who migrated to the South it was 27 per cent less than the expectancy. The cancer mortality of the psychotic ex-soldiers and of the Negro patients does not deviate from the data calculated on the cancer statistics of the white population of New York City. During the years 1938-1940 the number of cancer deaths exceeded tuberculosis deaths among the residents of St. Elizabeths Hospital; previous to 1938 tuberculosis deaths were more numerous. In 15 of the 94 male cancer patients and in 11 of the 61 female patients examined post mortem no metastases were found. Secondary involvement was most frequent in the lymph glands and liver. The liver of 61 patients (41 male and 20 female) was secondarily involved. The next sites in order of frequency were the lungs (15 cases in males and 14 in females), bones (18 cases), brain, peritoneum, adrenals, pleura and kidneys.

Review of Gastroenterology, New York

8:1-76 (Jan.-Feb.) 1941

*Further Observations on Use of Food in Treatment of Bleeding Peptic Ulcer (Meulengracht Diet). W. D. Mayer and J. J. Lightbody, Detroit.—p. 1.
New Concepts of Colitis and Other Intestinal Infections. J. Felsen, New York.—p. 8.
Allergic Reactions in Gastrointestinal Tract. J. H. Black, Dallas, Texas.—p. 17.
Some Pathologic Aspects of Carcinoma of Rectum. S. P. Reimann, Philadelphia.—p. 24.
Etiology of Peptic Ulcer. L. C. Sanders, Memphis, Tenn.—p. 30.
Primary Melanoma of Small Intestine: Report of Case. W. C. Gordon, New York.—p. 36.
Appendix Overlying the Liver in a Case of Undescended Cecum. A. X. Rossien, New Gardens, N. Y., and Z. Sagal, New York.—p. 44.
Functional and Biopsy Studies on Human Liver Following Administration of Unconjugated-Ketocholanic Acids. C. J. DeLor, J. W. Means, G. Y. Shinowara and H. L. Reinhart, Columbus, Ohio.—p. 48.
Cholesterol Studies of Blood in Diseases of Liver and Biliary System: Critical Review of 158 Cases. E. Boros, New York.—p. 55.

Meulengracht Diet for Bleeding Peptic Ulcer.—During four years Mayer and Lightbody treated 133 patients by the Meulengracht regimen or their modification of the method. All the patients made excellent recoveries. If indicated, various alkaline powders, creamalin, amphogel, iron preparations, liver extract and vitamin C were given. There were 7 deaths among the 133 patients. Secondary hemorrhage occurred in 14 patients; this includes 2 of the patients who died. Eight patients were continued on the diet in spite of the hemorrhage and made excellent recoveries. The bleeding of 2 patients ceased when the Meulengracht regimen was discontinued and starvation therapy instituted. In 3, secondary bleeding occurred with both the Meulengracht and starvation treatment; 1 of these then had a gastric resection with excellent recovery and the remaining 2 eventually recovered. The diet failed to relieve 4 patients. These patients refused to eat because of abdominal pain after eating; they were then placed on a Sippy diet with relief of pain. A previous history highly suggestive of gastric or duodenal ulcer was given by 113 of the patients, while 64 showed definite roentgen signs. Some degree of anemia, at times requiring blood transfusions, was encountered in most of the patients. The patients improved more rapidly than those treated by the starvation method. This coincides with the experience of Schiodt. The authors feel that the Meulengracht diet has definite merit. Analysis of the deaths discloses that 2 patients had malignant disease, 2 died of cardiac disease while recovering from hemorrhage, 1 died within two days after hospital admission without having eaten any food, 1 died soon after roentgen examination, which seemed to institute an uncontrollable hemorrhage, and 1 died after being on the Meulengracht regimen for twelve days. The failures, secondary hemorrhage and abdominal pains that occurred are frequent complications among patients treated by the usual starvation methods. It was apparent to the authors that the patients tolerated the diet remarkably well, were comfortable, rested easily, required little morphine, usually only at the onset of the treatment, and seldom was it necessary to administer hypnotics. There was no begging for food and water. None of the patients became irrational. Some of the patients had been hospitalized previously for hematemesis and were treated by the starvation method. They all stated that this method was far more agreeable.

Rhode Island Medical Journal, Providence

24:19-36 (Feb.) 1941

The Edwin Smith Surgical Papyrus. R. Hammond, Providence.—p. 19.
Luetic Heart Disease in Rhode Island. C. B. Leech, Providence.—p. 25.

Rocky Mountain Medical Journal, Denver

38:89-168 (Feb.) 1941

The Medical Profession's Ideals in Medical Service. A. C. Callister, Salt Lake City.—p. 106.
Placenta Praevia and Its Management. C. B. Ingraham and W. W. Tucker, Denver.—p. 113.
A Pediatric Program for the Family Physician. M. G. Peterman, Milwaukee.—p. 118.
*Parathyroid Tumors Causing Hypercalcemia. M. C. Jobe, Denver.—p. 121.

Parathyroid Tumors Causing Hypercalcemia.—Jobe believes that earlier medical literature has been confused and that no doubt parathyroidectomies have been performed needlessly for osseous lesions or Ewing's tumor, for sarcoma of the bone, for metastatic carcinomatosis of the skeleton and especially for Paget's disease. As improved laboratory technics have developed, agreement is crystallizing that unless hypercalcemia and hypercalciuria with a hypophosphatemia and an increase in plasma phosphatase are associated with roentgen signs of cystic formation in the skeleton or renal calculi and high hypercalcemia one is not justified in subjecting a patient to an exploratory operation for parathyroid tumor. The operation is hazardous. The differential diagnosis between hyperparathyroidism and similar appearing lesions of the skeleton, as Paget's disease, chiefly hinges on a careful history and physical examination and then on the absence of hypercalcemia. No case of Paget's disease has shown a definite hypercalcemia as does a parathyroid adenoma. Although the clinical observations of hyperparathyroidism are becoming more readily recognized, it is hoped that every aid in its diagnosis to rule out other bony lesions will be used. Only when a patient with the foregoing cardinal blood and roentgen changes is found is search for parathyroid tumor justified, otherwise the operation will be greatly abused and end in disappointment.

Southern Medical Journal, Birmingham, Ala.

34:1-134 (Jan.) 1941. **Partial Index**

Extensive Frontal Injuries. E. F. Fincher, Atlanta, Ga.—p. 1.
Treatment of Some Less Common Corneal Diseases. S. R. Gifford, Chicago.—p. 8.
Fenestration of Labyrinth in Chronic Conductive Deafness: Analysis of Results Obtained. E. H. Campbell, Philadelphia.—p. 13.
Treatment of Malignant Tumors of Adult Kidney. V. J. O'Conor, Chicago.—p. 27.
Surgical Treatment of Lymphogranulomatous Strictures of Rectum: Report of Twenty-Four Cases. H. E. Bacon, Philadelphia.—p. 31.
Early Diagnosis and Treatment of Carcinoma of Rectum. T. E. Jones, Cleveland.—p. 35.
Treatment of Surgical Shock with Blood Plasma. C. S. White, J. L. Collins and J. Weinstein, Washington, D. C.—p. 38.
Interrelation Between Vitamin B Complex and Anterior Lobe of Pituitary Gland. D. C. Sutton, Chicago.—p. 47.
Diagnosis and Treatment of Purpuric Diseases. R. R. Kracke, Emory University, Ga.—p. 56.
Immunization Against Infectious Diseases in the United States Army. J. S. Simmons, Washington, D. C.—p. 62.
Child Health: Responsibility of the Family Physician and the Pediatrician. H. F. Garrison, Jackson, Miss.—p. 67.
An American Health Program. N. B. Van Etten, New York.—p. 81.
Building Health Defenses. T. Parran, Washington, D. C.—p. 85.
The Naval Medical Officer's Public Health Activity, with Special Reference to National Defense. C. S. Stephenson, Washington, D. C.—p. 90.

Southern Surgeon, Atlanta, Ga.

10:79-152 (Feb.) 1941

*Vaginal Smears Correlated to Ovarian Function (4½ Months Fetus Through Puberty). M. J. Bennett, Philadelphia, and P. B. Russell Jr., Memphis, Tenn.—p. 79.
Intestinal Intubation. M. Thompson, Louisville, Ky.—p. 88.
Critical Review of 1,600 Blood Transfusions in Private Practice. J. E. Watson Jr. and R. L. Sanders, Memphis, Tenn.—p. 93.
Stenosing Tendovaginitis at Radial Styloid Process. C. F. Wood, Louisville, Ky.—p. 105.
Relationship Between Fecaliths in Appendix and Gangrenous Appendicitis. W. J. Tennison 3d and C. F. Dixon, Rochester, Minn.—p. 111.
Pulmonary Complications in Surgery of Biliary Tract: Study of 132 Consecutive Cases. H. B. Asman, Louisville, Ky.—p. 116.
Single Unit Cotton Thread Surgical Technic. K. P. A. Taylor, Puerto Armuelles, Panama.—p. 125.
Use of Hanging Cast in Treatment of Fractures of Humerus. R. T. Hudson, Louisville, Ky.—p. 132.
Pancreatic Lithiasis with Diabetes: Report of Four Cases. T. H. Thomason, Fort Worth, Texas.—p. 135.

Vaginal Smears Correlated to Ovarian Function.—Bennett and Russell believe that study of the vaginal smear will aid in the proper diagnosis of many conditions now considered out of the realm of gynecology. They obtain the smear in the following manner: A sterile cotton-tipped applicator is moistened with tap or distilled water and inserted just within the introitus. The specimen is procured by a gentle rotary motion and then it is rolled on a clean slide and the material is allowed to dry at room temperature without fixation. Approximately 15,000 slides have been examined in the authors' clinic since 1935, and the results are as reliable as the fixation method. The vaginal smear of the pregnant woman at eighteen weeks contains many types of bacteria accompanying a luteal domination. However, the smear from her 18 week fetus shows that there is only follicular stimulation. This suggests that the ovaries of the fetus have begun to function and are practically independent of further maternal influence. The 7 lunar month fetus continues to exhibit a follicular stimulation, but the maternal vaginal smear now shows a predominant follicular influence. Smears from a full term baby and the mother on the day of birth give evidence of a similar hormone influence. Daily smears taken from the full term newborn infant show that follicular stimulation gradually decreases until there is no evidence of it by the time the baby is 94 days old. One of the plausible reasons for the high incidence of infections among premature female infants may be attributable to the fact that they are born during the luteal domination period and are not as well prepared for their new environment as the full term baby. No bacteria are found in the vaginal smears from either fetus or newborn infant until they have been exposed to a new environment. Estrogenic determinations of the placental blood from a normal pregnant woman at term recovered at cesarean section substantiate the vaginal smear findings that the parent does not control the ovarian functions of the fetus. The influence on the nursing baby's ovaries by the hormones in maternal milk is negligible, as exemplified by studies of smears from the mother and baby two hundred and twenty days after delivery. The follicular and luteal predominance recur at a definite cyclic period through the remainder of the normal individual's life until changes of menopause take place. Abnormal ovarian conditions would alter this cyclic pattern. An article concerning these cases is to be published. However, the cycle of the mature female and a diagnosis of abnormal ovarian conditions may be predicted by studying the vaginal smears of the young female previous to the onset of the menses or puberty. Striking examples of pathologic ovarian conditions in the child are the prepubescents who menstruate, the child mothers and perhaps the baby who menstruates because of estrogenic overstimulation. The vaginal smear can aid in medicolegal questions demanding proof of criminal assault. Trauma can be diagnosed readily, and the authors have found spermatozoa in the vaginal smear two days after coitus. The masturbating female has been detected by vaginal smears.

Southwestern Medicine, El Paso, Texas

25:1-34 (Jan.) 1941

Management of Chronic Asthma. R. M. Balyeat, Oklahoma City.—p. 1.
Present Concept of the Cancer Problem. J. R. Maxfield Jr., Albuquerque, N. M.—p. 4.
Intravenous Anesthesia: Its Increased Possibilities When Combined with Various Other Methods of Anesthesia. R. C. Adams and J. S. Lundy, Rochester, Minn.—p. 8.
Correction of Abnormally Large or Small Breasts. H. O. Barnes, Los Angeles.—p. 10.
Transitory Myopia Following Sulfanilamide. M. P. Spearman, El Paso, Texas.—p. 13.
*Iris Changes in Syphilis: Clinical Survey. J. T. Lowry, Alamogordo, N. M.—p. 14.

Iris Changes in Syphilis.—Lowry describes a change from normal in the iris of syphilitic patients. The pupillary and ciliary zones are normally marked by radial striae, the inner zone being more heavily striated than the outer. The normal brown iris usually presents a smooth anterior surface in which changes in its contour are readily noticed, while normally the blue iris has a more complex pattern and changes in its contour and pattern are not as easily recognized. Basically the iris in patients with syphilis presents the following deviations from the normal: 1. The inner zone in relation to the outer zone is set on a deeper or posterior plane. 2. The line of demarcation between the two zones is more jagged and is not so concentric with the pupillary margin of the iris. 3. The outer segment is irregularly pitted by small oval or pear-shaped depressions whose long axis is perpendicular to the pupillary margin. These are known as the crypts of the iris. They are sometimes seen in normal eyes but in no large numbers. 4. In a large percentage of patients with syphilis the pattern of the iris is almost entirely lost. The anterior surface of the iris is characterized by a bizarre pattern which is easily recognized. It is characterized only by an extreme irregularity. There seems to be no relation between the occurrence of this change and the stage of the infection. Three types of patients were examined for this sign: 43 normal controls, medical students, doctors, nurses and technicians, 96 patients in the outpatient syphilis clinic at Parkland Hospital and 139 general hospital patients. The findings were checked with serologic reports and with the history. Of the last group 41, or 29.5 per cent, had syphilis. Sixteen had a positive iris and a negative Kline test and history. Ten had a negative iris and a positive Kline, Kahn, Wassermann and history. The iris sign gave a correct diagnosis in 81.3 per cent of the hospital patients. Of the normal controls the iris sign gave 6.8 per cent false positives and 93.2 per cent true negatives. The respective figures for the syphilitic group are 17.7 and 82.3 per cent. The number of false positives in the normal control group is much less than in the hospital patients. The reason for this is difficult to explain, but the normal control group was composed of young people in good health and economic status and the hospital group was composed of the general run of patients of a large charity hospital. The survey will be continued, with certain changes of method which may allow more accurate estimation of the probable benefit of the method. The next series will consist of patients known to have syphilis and for whom accurate and extensive records and serologic studies are available. An attempt will be made to correlate the time at which treatment was started, the time of occurrence of iris changes with regard to the stage of the disease, the occurrence of iris changes in congenital syphilis and an attempt to grade the changes in the iris.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

1:107-144 (Jan. 25) 1941

*Acute Bronchiolitis in Children. D. Hubble and G. R. Osborn.—p. 107.
Exploration of Common Bile Duct for Stone: Drainage with T Tube and Cholangiography. M. J. Smyth.—p. 111.
Direct Drainage of Lung Cavities in Pulmonary Tuberculosis. J. V. Cussen.—p. 115.
Feminism. L. R Broster.—p. 117.
Prosthetic Ulcer of Mouth. H. T. Simmons.—p. 119.

Acute Bronchiolitis in Children.—Hubble and Osborn state that, during the first ten weeks of 1940, 50 children with an acute respiratory infection were admitted to the Derbyshire Hospital. Of these 27 were less than 1 year old; 7 children less than 2 years of age died. Six other children were seen in family and consulting practice, and although little was added to the clinical picture, 2 healthy middle-class children respectively 4 and 2 years of age died. This corrects the common impression that fatalities do not occur except in infants or in debilitated children. Not all the children were suffering from acute bronchiolitis. The final diagnosis in some was acute bronchitis and in others bronchopneumonia, but in many there was a phase in the infection when the small bronchioles were filled with exudate. Occasionally the children died in this phase of obstructive dyspnea; some recovered without further extension of the inflammatory process, but more often bronchopneumonia developed, in 3 with a fatal termination. Acute bronchiolitis is rarely seen except when influenza of a respiratory type is epidemic. It is not limited to any age group. The fact that in children less than 2 years of age the attack may be overwhelming may depend on a defective local resistance in the absence of any acquired immunity. Another factor may be the heightened virulence of the organism in its passage through several hosts, for the baby is usually the last member of the household to contract a catarrhal infection. It is most often seen in children of the poorer classes whose lower immunity presumably depends on defective and injudicious feeding, confined living space and closer contact with infections. However, middle class children do not escape. No influenza A virus was recovered by the Medical Research Council workers during the 1940 epidemic, with the exception of 1 specimen brought back from the army in France. The main difference between the lesions observed at necropsy of 2 human cases and those in the experimental animals is the extent of the emphysema. Bronchial obstruction by plugs of mucus are of considerable clinical importance. The onset may be acute, with fever, rapid and labored breathing, cyanosis, severe cough and prostration. More often the child has for a day or two a slight fever, laryngeal cough and some gastrointestinal upset. A laryngeal cough together with soreness over the larynx, hoarseness and sometimes aphonia develop next. Dyspnea and stridor, due to laryngeal spasm, may be present at this stage. From this phase the child may pass suddenly to bronchiolitis. The bronchioles become plugged with exudate and the clinical picture is obstructive dyspnea. If death from obstructive dyspnea occurs, it does so on the second, third or fourth day. More often the fine rales give way to the coarse rales of an ordinary bronchitis when the acute phase is over, and this may persist for a few days. Recovery of patients with a severe infection with obstructive dyspnea depends on their being nursed in warm moist air, with an adequate oxygen supply. Alcohol is the best sedative for children and phenobarbital the second best. No other sedative than alcohol should be used for children with acute bronchiolitis, for if the sedatives depress their respiratory excursions and their coughs are alleviated they die: any derivative of opium may bring a sleep which is final. In the treatment of acute bronchiolitis the four factors which demand separate consideration are the infection, the obstructive dyspnea, the cyanosis and the collapse, and consequently sulfapyridine, steam, oxygen and bronchoscopic aspiration (in the hands of the expert) may be life saving.

Lancet, London

1:99-130 (Jan. 25) 1941

Diagnosis and Treatment of Secondary Shock: Study of Twenty-Four Cases. A. Kekwick, H. L. Marriott, W. d'A. Maycock and L. E. H. Whitby.—p. 99.
*Sulfathiazole in Cerebrospinal Fever. H. S. Banks.—p. 104.
Treatment of War Neurosis. G. Debenham, D. Hill, W. Sargant and E. Slater.—p. 107.
A Pneumococcus Which Required Carbon Dioxide for Its Growth. A. Fleming.—p. 110.

Sulfathiazole in Epidemic Meningitis. — Banks states that in America there is a disposition to view with disfavor the employment of sulfathiazole in meningitis because it achieves only a low concentration in the cerebrospinal fluid. He cites Carey's statement that "it should not be used in meningitis, as its concentration in the spinal fluid reaches only from 10 to 30 per cent of that in other body fluids." He hopes to show, however, that this conclusion is contradicted, at least for meningococcic meningitis, by the success obtained in practice, although he admits that Carey's premises are substantially correct. He used sulfathiazole treatment in 96 cases, of which 17 were classified as mild, 50 as moderate, 26 as severe and 3 as very severe. In exactly a third (32 cases) there were petechial or purpuric rashes. The author followed the dosage scheme which he originally adopted for sulfanilamide and later for sulfapyridine in the treatment of meningococcic meningitis. The age group under 2 was given a daily dose of 3 Gm.; from 2 to 5 4.5 Gm.; from 5 to 10, 6 Gm.; from 10 to 15, 7.5 Gm., and over 15, 9 Gm. This scheme was maintained for an initial period of two to three days according to severity; then two thirds of the dose was given for two days and finally one third for a further two days. The period of administration is six to seven days, and the total amount of the drug given is from 40 to 50 Gm. for an adult. The drug is given every four hours during the initial period and thereafter every four or six hours according to convenience. In 52 cases sulfathiazole was used after one or more preliminary doses of sulfapyridine, and in 44 cases sulfathiazole was used alone. The fatality rate in cases treated mainly or wholly with sulfathiazole was 2.1 per cent, which compares favorably with previous series treated with serum and sulfanilamide and with sulfanilamide or sulfapyridine alone or combined. Sulfathiazole, though not yet tested in epidemic conditions, has rapidly cured some extremely acute cases. The evidence so far suggests that it is at least equal in potency to sulfapyridine in meningococcic disease. There is evidence that with adequate dosage bacteriostasis is complete and phagocytosis advanced within twelve to twenty-four hours. Concentration in the cerebrospinal fluid varies from about 15 to 40 per cent of that in the blood and rarely is greater than 1.5 mg. per hundred cubic centimeters even on high dosage. The comparative rarity of nausea, vomiting and dehydration, and the absence of depression and mental confusion, make the treatment with sulfathiazole more pleasant and the management of the case easier than with sulfapyridine. Other toxic effects are also rare. High dosage is well tolerated. One or two intravenous injections of the 5 per cent sodium solution are recommended in all severe cases and when vomiting persists.

Medical Journal of Australia, Sydney

1:97-128 (Jan. 25) 1941

Chemical Warfare. I. Maxwell.—p. 97.
*Some Observations on Biochemical Changes Associated with Hemorrhage from Stomach and Duodenum. Marjorie Bick and I. J. Wood.—p. 104.

Biochemical Changes Associated with Gastric and Duodenal Hemorrhage. — Bick and Wood determined the biochemical changes following massive gastric and duodenal hemorrhage. The studies were of a detailed nature of 8 patients and 2 normal control subjects (for three days) and occasional of 5 other patients. The detailed study included the pulse rate, the blood pressure, the hemoglobin value, the blood urea, sugar and chloride levels, the plasma protein content, the serum calcium content and the urinary volume, chloride, dextrose, urea and calcium contents. Observations were also made of the calory intake and on the effects of the intravenous infusion of blood and dextrose saline solution. The blood pressure was usually low after a hemorrhage but rose slowly

after bleeding had ceased. The rise was hastened by blood transfusion. The hemoglobin value was low in all cases, falling both during and immediately after a hemorrhage. It was a valuable guide to the patient's progress. The plasma protein content was lowered, but usually only to a minor degree. The blood urea content was elevated in all cases and appeared to be a good index of the patient's general condition. It was highest when the patient was not only exsanguinated but drowsy, thirsty and dehydrated. The blood chloride content was always low, and it was associated with a pronounced diminution of chloride in the urine. The liberal administration of chloride orally, rectally or intravenously appeared to benefit the patient. Immediately after a massive hematemesis the urinary output was usually diminished; but it rapidly improved after the liberal administration of fluid. To maintain a satisfactory positive fluid balance, intravenous injection of blood or dextrose-saline solution was sometimes necessary. It was often difficult to have patients take an adequate diet; fluids, especially plain cold water, were taken more eagerly. Acidosis, as shown by a diminished alkali reserve, was frequent. The serum calcium content was usually within normal limits. Transfusion of citrated blood elevated the blood pressure and hemoglobin percentage and slightly the plasma chloride and protein levels. The blood urea and serum calcium levels tended to fall. Dextrose-saline solution intravenously increased the plasma chloride content and the urinary output of chloride. The available methods of clinical biochemical analysis were modified so that the numerous determinations could be carried out on the smallest convenient specimen of blood. The studies uphold the contention that patients who have recently had profuse gastric or duodenal hemorrhage are suffering not only from anemia but also from depleted blood volume, starvation, dehydration, chloride and protein deficiency, uremia and acidosis. The object of treatment should therefore attempt to arrest hemorrhage and minimize the likelihood of further bleeding and to forestall any further depletion and to correct that which exists. Should hemorrhage recur in spite of blood transfusions, surgical intervention may give the patient the only chance of survival. The dangers of surgical arrest of hemorrhage are becoming less formidable now that massive blood transfusion is plausible and other restorative measures are available.

Practitioner, London

146:65-128 (Feb.) 1941

Significance of High Blood Pressure and Its Complications. G. W. Pickering.—p. 65.
Management of a Case of High Blood Pressure (Essential Hypertension). H. W. Jones.—p. 72.
Hypotension. H. J. Starling.—p. 77.
Measurement of Arterial Blood Pressure, with Special Reference to Life Assurance Examinations. K. S. Smith.—p. 86.
Prevention and Treatment of Affections Occurring in Magnesium Industry. N. Hypher.—p. 92.
Treatment of Peptic Ulcer in Wartime. N. C. Tanner and J. Jens.—p. 100.
Some Observations on Treatment of Acute Staphylococcic Infections with Sulfathiazole. E. C. B. Butler.—p. 106.
*Modern Therapeutics: XIX. Use of Vitamins in Treatment. H. M. Sinclair.—p. 109.

Vitamins in Treatment.—Sinclair points out not only that vitamins cure certain deficiency diseases but that often slight deficiencies cause many signs and symptoms, often difficult to diagnose, and produce ill health that can be discovered to be related to lack of vitamins only by employing laboratory methods of diagnosis. Such subclinical deficiencies have been shown to be common even in times of peace and are likely to become more common as war progresses. The practitioner now has to be alert to detect mild deficiency. Vitamin deficiencies are seldom single, and to treat a case of multiple deficiency with a pure vitamin is bad therapy. It is important to bear in mind the causes of vitamin deficiencies. A person may partake of a diet that appears well balanced; but the green vegetables may be boiled, perhaps in a copper utensil or with soda, and the water which contains the little vitamin that was not destroyed is thrown away; consequently a deficiency of water soluble vitamins, particularly B_1 and C, may result. The person may have achlorhydria or take alkalis and thereby destroy certain vitamins, or diarrhea may prevent their absorption. Therefore the cause of the deficiency must be determined and then corrected.

Presse Médicale, Paris

48:1041-1064 (Dec. 18-21) 1940

*Effect of Ephedrine and Epinephrine in Acute Pancreatitis. P. Jacquet, S. Thieffry and G. de Chirac.—p. 1041.
Treatment of Urgency of Pulmonary Perforations Complicating Artificial Pneumothorax. J. Rolland and N. Tsoutis.—p. 1042.
Experimental Epilepsy. J. Asuad.—p. 1043.
Place of Hemorrhagic Colorectitis in General Pathology. H. Maschas and H. Mollard.—p. 1047.

Ephedrine and Epinephrine in Acute Pancreatitis.—Jacquet and his associates found that massive doses of ephedrine, sufficiently long continued, not only gave relief from pain and shock of acute pancreatitis but cured as well in cases in which surgical intervention was not resorted to because of complications. In 1 case in which the drug therapy was effective hemorrhagic pleuritis developed within forty-eight hours. Morphine was unavailing. Ephedrine was then administered in two daily doses of 0.04 Gm. each. This at once assuaged pain, shock and pleurisy. However, when the dose was reduced to 0.02 Gm., pain recurred. This happened several times. The original heavy dose was then restored and retained until the patient's condition seemed to warrant diminution of the dose. Altogether 0.94 Gm. was given in the course of twenty-five days. The patient recovered and was well when seen a year later. In 2 other cases ephedrine was likewise able to still pain and control shock, but when recovery was delayed surgical intervention disclosed necrotized tissue in a half liter of blood-colored fluid in the 1 and a hemorrhagic exudate of the peritoneum in the other. According to the authors, dosage with ephedrine must be large, sustained for several days and given parenterally in acute pancreatitis. No intolerance to the drug was observed. The authors report good results obtained by other investigators using epinephrine in acute pancreatitis.

Giornale di Clinica Medica, Parma

21:1357-1450 (Nov. 20) 1940. **Partial Index**

Normal Heart in Course of Some Hemodynamic Tests. D. Mircoli and F. Milanti.—p. 1357.
*Bone Marrow in Paget's Disease (Osteitis Deformans). F. Tronchetti.—p. 1392.

Bone Marrow in Paget's Disease (Osteitis Deformans).—Tronchetti studied the peripheral and medullary blood of 3 patients with advanced Paget's osteitis deformans. The number of erythrocytes in the peripheral blood was normal or slightly increased. An active erythropoiesis with erythroblastic anaplasia and abundance of reticuloendothelial cells was found in the medullary blood. The type of alterations of the medullary blood did not correspond to that caused by the disease of bones, which are of a type of myeloid hypoplasia or atrophy. A review of the literature on experimental and clinical work concerning blood changes in several diencephalohypophysial disorders convinced him that the alterations seen in the medullary blood in Paget's disease are of diencephalic-hypophysial origin.

Deutsche medizinische Wochenschrift, Leipzig

66:1233-1260 (Nov. 8) 1940. **Partial Index**

Prognosis of Pneumonia. G. Wiele.—p. 1233.
Physiologic Disturbance of Ovarian Function During Pregnancy. H. Friedrich.—p. 1236.
Immunization Against Diphtheria in Adults. G. Wildführ.—p. 1240.
*New Aspects of Pathogenesis of Endometriosis. E. Philipp and H. Huber.—p. 1242.
*Sudden Death. E. Jeckeln.—p. 1246.

Pathogenesis of Endometriosis.—According to Philipp and Huber, endometriosis develops either by continuous proliferation of the uterine mucosa or more frequently by implantation. In the majority of cases of abdominal endometriosis the origin of the implantation is the endometriosis of the interstitial portion of the tube; in the others the source is the uterine mucosa itself. The implantations of abdominal endometriosis make their way through the tube or they may utilize other available routes. Hematogenic spreading is theoretically possible. The authors on the basis of their investigations arrive at a unitary interpretation of endometriosis. They reject the theory of serosa epithelium in its original and modified form, as well as the assumption that every mesenchyma is capable of forming foci

of endometriosis. They believe that local formation of foci of endometriosis as the result of tissue differentiation is no longer tenable. Their own conception is similar to that of Sampson, who was first to recognize implantation of detached fragments of uterine mucosa as the cause of endometriosis. Sampson's theory met opposition because it erroneously presupposed that cast-off menstrual mucosa was the source. It is the living freshly built-up mucosa which is disseminated. The prerequisites in the majority of cases are the existence of endometriosis in the interstitial portion of the tube and a functioning ovary. Endometriosis does not develop before or after the period of ovarian function, except, perhaps, when ovarian hormones are administered. The importance of hormones in the development of implantation is demonstrated by the fact that they are frequently localized near the ovaries. A favorite location is the ovary itself, where so-called chocolate cysts develop. The authors were able to observe such cysts in various stages of development. They report three cases in which endometrial tissue was present in the corpus luteum. They emphasize that endometriosis owes its development to the special properties of the uterine mucosa: the capacity of the cytogenic stroma to grow into deeper layers and the ability of uterine mucosa to attach itself when carried outside the uterus. The route of spread plays a minor role, dissemination taking place most frequently by way of tubes into the abdominal cavity. Possibility of hematogenic dissemination has been established by microscopic studies. Perfusion of the tissues with ovarian hormones produces more favorable conditions for implantation.

Sudden Death.—On the basis of one hundred and twenty-three necropsies in cases of unexplained sudden death, Jeckeln states that more than two thirds were the result of a cardiac lesion, coronary sclerosis being most frequent. It was six times as frequent in men as in women. Acute infarct resulting from the occlusion of a branch of the coronary was present in only 3 cases to the extent sufficient to explain death, while in 3 others it was complicated by cardiac rupture. Late lesions due to impaired circulation of the myocardium existed in the majority of the cases. Explanation of sudden death becomes difficult when microscopic examination of the heart muscle fails to disclose notable changes. Severe coronary sclerosis and cardiac dilatation are usually found in such cases. The fact that death often followed a sudden exertion suggests that an acute coronary insufficiency developed from the discrepancy between the oxygen supplied to the myocardium and the suddenly increased oxygen demand. There exist cases with myocardial infiltration but without extensive coronary sclerosis. The author describes a case with changes in the coronary vessels, excessive filling of the stomach and changes in the region of the conduction system. Excessive filling of the stomach is frequently encountered in sudden death from heart disease. In some of the sudden cardiac deaths there exist more than one lesion, such as valvular lesions, excessive fat about the heart or cardiac calcifications. In 7 cases sudden death was the result of syphilitic aortitis. Among the 6 cases in which sudden death could be traced to a valvular defect, there were 5 with aortic stenosis and hypertrophy of the left ventricle. In another case death was caused by sudden cardiac decompensation in the presence of mitral stenosis and coronary sclerosis. Extracardiac lesions, particularly chronic disorders in the pulmonary circulation, may also cause sudden death. There were 10 cases of this type. Cardiac decompensation due to hypertension was the cause in 2. In 8 sudden death was the result of disease of the air passages. In 2 cases death was caused by rupture of the aorta, and in 1 by rupture of a dilated splenic artery. Only 3 cases of fatal apoplectic stroke were observed, 1 in a girl of 17 with nephrogenic hypertension. In 2 other young persons status epilepticus was the cause. Ruptured basal aneurysm was detected in 19 cases. The author studied 30 cases of sudden death in children, 6 being stillbirths. Fetal erythroblastosis was the cause of death in 1; in some of the others no cause could be found. Necropsies on 21 infants and young children who had died suddenly disclosed in 2 traumatic brain lesions sustained at birth, in others acute nutritional disturbances, infections, acute respiratory disorders and postdiphtheric cardiac lesions. In 1 boy aged 3 years and 9 months sudden death followed a mild cold; necropsy disclosed acute, suppurating phlegmon of the epiglottis with severe edematous swelling. The author observed this lesion in several children and regards it as a complication of influenzal infection of mucous membranes. Sudden death after slight gastrointestinal symptoms with headache in a boy of 7 proved to be the result of acute poliomyelitis.

Wiener klinische Wochenschrift, Vienna

53:885-906 (Nov. 1) 1940

Hallux Valgus. O. Stracker.—p. 885.
*Mineral Metabolism in Recklinghausen's Osteitis Fibrosa Cystica Generalisata Before and After Excision of Parathyroid Tumor, and Its Relation to Clinical Course of Disease. Lisbeth Reuss and D. Roller. —p. 889.
Thyroxine Therapy of Metasyphilitic Diseases. J. Lhotsky.—p. 894.
Abscess of Spinal Cord: Case. H. Lenz.—p. 899.

53:907-928 (Nov. 8) 1940. **Partial Index**

*Mineral Metabolism in Recklinghausen's Osteitis Fibrosa Cystica Generalisata Before and After Excision of Parathyroid Tumor, and Its Relation to Clinical Course of Disease. Lisbeth Reuss and D. Roller. —p. 912.
Action of Lactoflavin on Salt Metabolism. K.-H. Lindner.—p. 918.
Simplification of Evaluation in Determination of Basal Metabolism. W. Holzer.—p. 924.

Mineral Metabolism in Generalized Osteitis Fibrosa Cystica and Parathyroid Tumor.—According to Reuss and Roller, eleven years have elapsed between the suggestion for the removal of a parathyroid tumor in Recklinghausen's osteitis fibrosa and its performance. The operation seemed to have an extraordinary success. Later experience showed that the condition may recur and that nephrolithiasis may develop. The interest seems to have shifted from the pathologic-anatomic aspects of the disease to functional and physiologic features, in particular to the importance of mineral metabolism. The authors made careful studies of the mineral metabolism in a patient in order to detect the effect of the operation on the parathyroids. As early as four hours after the operation the reflexes and muscular irritability were greatly increased. On the day after the operation slight touch elicited muscular spasm in some groups of muscles. In contrast to this increased irritability, the patient slept almost constantly. Postoperative manifestations in their case suggest that either a second parathyroid tumor has formed or that two such tumors existed at the time of operation. The latter assumption does not appear plausible in view of the enormous postoperative decrease in the calcium content. They also consider the possibility of a diffuse hyperplasia of the parathyroids. Results in the case suggest that De Forest's method of medication with irradiated ergosterol is effective only if corresponding quantities of calcium are added. Excessive amounts of irradiated ergosterol might be responsible for the complaints following its administration. Comparison of the clinical manifestations with the results of metabolic studies proved of diagnostic and prognostic value. The authors feel that investigation of the calcium and phosphorus metabolisms will permit of an estimation of the further course of the disease as early as a few days after the operation. The detection and removal of a parathyroid tumor do not signify that the disease has been terminated.

Zeitschrift für Tuberkulose, Leipzig

85:193-320 (Nov.) 1940

Suggestions for Method of Standardization for Tuberculin and an Antituberculosis Vaccine. G. Petragnani.—p. 193.
Sequels of Benign Miliary Tuberculosis of Lung. G. Simon.—p. 200.
*Artificial Production of Ahesions Between Partially Free Pleural Clefts Before Application of Suction Drainage. M. Flügge.—p. 215.
Serologic Studies on Human and Bovine Tubercle Bacilli. H. Harpøth. —p. 221.
Influence of Angina or Active Pulmonary Tuberculosis. G. Knuth.—p. 235.
Effects of Chronic Anoxemia on Heart and Circulation of Patients with Pulmonary Tuberculosis. H. C. Landen.—p. 239.
Postpleuritic Tuberculosis: Connection Between Exudative Pleurisy and Pulmonary Tuberculosis. T. Carellas.—p. 245.

Artificial Production of Adhesions Before Suction Drainage.—The first requirement for Monaldi's method of suction drainage, according to Flügge, is that the obliteration of the pleural cavity in the region of the cavity will discharge into

the pleural space and produce empyema. Allowing the pneumothorax to disappear does not guarantee that the pneumothorax space is really closed. Adequate adhesion can be expected only if the pneumothorax subsides with the formation of an exudate. It is advisable to induce an exudate about the cavity whenever a free pleural space exists. At the sanatorium in Davos, injection of talcum into the pleural space has been used in 7 cases, in 5 of which it has since been possible to establish suction drainage. It is possible to produce pleurisy with from 0.5 to 2 cc. of talcum. The pleuritic pains which develop immediately, or a few hours after the introduction of the talcum, may be severe, but they generally subside within two or three days. The resulting exudate is sterile. Its spontaneous absorption is awaited, because the aim is formation of adhesions. Repeated attempts at pneumothorax in various places are important in order to exclude the presence of free pleural spaces. Only in this manner will it be possible to detect small recesses of sacculated pneumothorax and avoid the formation of empyema. The introduction of talcum may have to be repeated, because one insufflation may produce only a local reaction. The author obtained an exudate in 6 of his 7 patients. In one instance dry pleurisy resulted, but this was sufficient to counteract the small residual pneumothorax and suction drainage could be instituted eleven days later.

Tokyo Igakkwai Zassi, Tokyo

54:929-1028 (Dec.) 1940. **Partial Index**

*Comparative Studies on the Effect of Levulose and Dextrose on Insulin Hypoglycemia. M. Nakayama and M. Murakami.—p. 952.

Levulose and Dextrose in Insulin Hypoglycemia.—Nakayama and Murakami induced hypoglycemia in 1 diabetic and 8 nondiabetic patients and tested the recovery effects of levulose and dextrose administered by mouth in doses of from 30 to 50 Gm. Within thirty minutes after the administration an improvement of subjective symptoms, when levulose was given, appeared only in 2 instances, while dextrose produced the same result in all cases. In the 2 patients who responded favorably to levulose administration, the evidence of improvement appeared more slowly and the normalizing effect on the pulse rate and blood pressure was less distinct than when dextrose was given. Similar observations were also made by intravenous injection of 40 cc. of a 50 per cent solution of either levulose or dextrose. Clinical improvement was noted only in one instance after the injection of levulose, while with dextrose injection the recovery from symptoms of hypoglycemia was effected within the expected time in all cases (4 diabetic and 6 nondiabetic patients). From these observations the authors recommend the use of dextrose in the treatment of insulin hypoglycemia.

Klinicheskaya Meditsina, Moscow

17:1-140 (No. 12) 1939. **Partial Index**

Treatment of Diabetes with Hypoglycemic Doses. V. G. Baranov.—p. 11.
Diathermy in Internal Diseases. V. A. Valdman.—p. 22.
Vitamin Therapy of Infected Wounds. N. V. Antoshina.—p. 37.
Allergic Factor in Pathogenesis of Acute Hepatitis. E. Ya. Martynova.—p. 55.
Significance of Indirect Symptoms for Roentgen Diagnosis of Gastric Ulcer. B. A. Tsybulskiy and S. A. Sviridov.—p. 97.
*Selective Diet for Bleeding Ulcer Patients. I. O. Neymark.—p. 104.

Selective Diet for Bleeding Ulcer Patients.—Neymark reports observations on 130 patients, 100 of whom entered the hospital after the hemorrhage while 30 entered in the course of bleeding. All the patients were given a liberal diet advocated by Meulengracht and consisting of albumin 90 Gm., fat 110 Gm. and carbohydrates 420 Gm. The effect of hemorrhage on the ulcer symptoms was inconstant and varied. Pain disappeared shortly after the hemorrhage in 23 out of 100, it was considerably lessened in 36, while in 6 the hemorrhage was not preceded by pain. The niche in the roentgenogram was demonstrable in the great majority of the cases in which symptom pain persisted after the hemorrhage. The author believes that the favorable effect of hemorrhage on the ulcer is due to the reduction of the inflammatory state, of the gastritis or duodenitis in the vicinity of ulcer brought about by the diminution in the amount of the edema, vascular hyperemia and lowering of the tone of the muscularis mucosae. Persistence of pain after hemorrhage suggests the existence of a callous ulcer, marked cellular infiltration of the tissues and fibrous changes in the mucosa. The disappearance of pain after hemorrhage is not the sole criterion of the future behavior of the ulcer. Pathologic changes in the vicinity of the ulcer are not always paralleled by those within the bed of the ulcer. While the edema and induration about the ulcer may diminish, the destructive process may continue in the bed of the ulcer. Such cases are characterized by a progressive fall in the blood hemoglobin and a tendency to gross bleeding at brief intervals despite a liberal diet. These cases are not amenable to conservative treatment and should be referred for surgical intervention. The question of feeding a bleeding patient must be determined on the basis of the clinical picture. Early liberal diet, as advocated by Meulengracht, is indicated in cases in which symptom pain disappears shortly after the hemorrhage. When pain persists, the diet must be more sparing and the food must be liquid or mushy. Repeated blood transfusions and parenteral administration of vitamin C are indicated. In only 3 of the author's 130 cases was operative intervention necessary. He concludes that the diversified diet cannot be applied in all cases. Even among the favorably reacting cases there are a few in which the liberal diet provokes pain. A more restricted diet is required in such cases. The author also feels that, contrary to the opinion of Meulengracht, a liberal diet is not applicable during the first twenty-four hours of hemorrhage.

Acta Ophthalmologica, Copenhagen

18:224-404 (Nos. 3-4) 1940. **Partial Index**

*A Family with Total Color Blindness. E. Holm and C. V. Lodberg.—p. 224.
Distribution of Dextrose in Nonvascularized Tissues of Eye. R. Weekers.—p. 259.
Occurrence of Mast Cells in Human Eye During Various Pathologic Conditions. H. Holmgren and A. Stenbeck.—p. 271.
Problem of Atropine in Glaucoma. S. Werner.—p. 295.
Melanosis Bulbi with Melanosarcoma. O. Carlberg.—p. 301.
Sex Incidence of Cataract, with Special Reference to Its Exogenous Causes. P. W. Salit.—p. 309.
Weil-Felix Seroreaction in Trachoma. K. Raski.—p. 321.
Eye Symptoms in Malignant Tumors of Rhinopharynx. E. Godtfredsen.—p. 336.
Traumatic Edema of Cornea. P. Brændstrup.—p. 355.

Total Color Blindness.—According to Holm and Lodberg, total color blindness, which is designated also as monochromasia or achromatopsia, is only one of a group of symptoms, photophobia, nystagmus and considerable amblyopia being associated with it. After reviewing the present status of knowledge on total color blindness and some of the literature, particularly on the heredity, the authors report their own observations among the population of a small Danish island. The inhabitants of this island numbered about 1,600. There were 23 cases of color blindness on this island. The authors examined 18 and obtained as complete and reliable genealogical tables as possible. The conditions on the island favored the manifestation of recessive disease, because the inhabitants rarely left their native soil and a matrimonial union between an islander and a foreigner was frowned on. The result was close relationship among the inhabitants. Although ordinarily color blindness is more frequent in men than in women, among the 23 subjects under consideration there were only 9 men and 14 women. In four groups with known consanguinity there were 5 color blind to 10 normal individuals and in eight groups without known consanguinity there were 17 color blind and 34 normal persons. Thus the ratio was exactly the same, namely 1:2 instead of the theoretical ratio of 1:3. Consequently there is a "great recessive" surplus. The accumulation of cases is easily explained by the special conditions prevailing in the island; it does not detract from the fact that the disorder is scattered and of more or less the same incidence in most countries. This might suggest that the anomaly occurs here and there by mutation of a variable gene, after which it is recessively transmissible. This theory is not refuted by the fact that the cases observed all over the world are much alike, because experimental investigations show that the same mutations do recur.

Book Notices

Accident-and-Health Insurance. By Edwin J. Faulkner, A.B., M.B.A., President, Woodmen Accident Company and Affiliated Companies. Cloth. Price, $4. Pp. 366. New York & London: McGraw-Hill Book Company, Inc., 1940.

All who have tried to apply the insurance principle to medical care have felt the need of a realistic and comprehensive treatment of the subjects discussed in this work. Hasty experimenting in the disability field brought heavy losses to New York life insurance companies. Incalculable elements are almost innumerable. Definitions of accident and disease are still many and conflicting. "Benefits provided to reimburse the insured for the costs of hospital and medical care represent the greatest variety of practice." The "moral hazard" multiplies these uncertainties. "No single factor equals it in importance in determining the acceptability of a risk." It varies according to age, sex, race, location and occupation, and it changes with the introduction of insurance and other social changes. Rates have so far been made largely by trial and error, and as a result loss ratios have been almost catastrophic. Tables of premiums and indemnities have now been calculated to allow for nearly all these uncertainties, and these tables are apt to surprise some of those who are blithely starting new plans without proper study. "High expenses are characteristic of the disability business." Forty-seven and one-half cents of the health insurance dollar is expected to be expended on costs other than indemnity. These statements tend to blast the optimism of those who look on health insurance as a means of reducing medical costs. Nonprofit group hospitalization, state medical society medical service plans and commercial company proposals are all analyzed. Every one who is interested in trying to establish any type of prepayment plan for medical service will find this work indispensable.

Report of the President and of the Treasurer, Carnegie Corporation of New York, for the Year Ended September 30, 1940. Paper. Pp. 183, with 1 illustration. New York, [n. d.].

Pensions for teachers have long been associated in the public mind with the name of Andrew Carnegie, since it was he who first provided the means for such pensions on anything like a national scale. It will be noted with interest that the trustees of the corporation on March 16, 1939 approved and authorized a policy which, humanly speaking, will insure payment in full to the three thousand, four hundred and fifty persons now receiving pensions from the Carnegie Foundation or on its list of pensionables. President Keppel discusses the needs of the Carnegie Institution of Washington, dental medicine, general and higher education, adult education and the interest of the corporation in libraries and in the arts. Most significant, however, are his concluding observations on the relationships of philanthropic foundations to education. He says (page 29, lines 4-11) ". . . education requires public approval and, if possible, public understanding as well." But although growing public interest is a favorable factor, the author feels that much remains to be done to clear the public mind as to what the public itself wants from education, and what it can reasonably expect, and, by the same token, to clarify the teachers' ideas as to what the processes of formal education can and cannot do to affect the social order. He pleads for a wider and fuller understanding, on the part of students, teachers and the public, of the enormous range in the native abilities of different individuals and in the qualitative differences in the grasps of human beings who constitute our universities and colleges. He continues: "We recognize in our system of professional and vocational training the relationship between what we teach our students and what they must later do to make a living, but we are not nearly so clear as to the relationship between the durable general knowledge and the attitudes which the students acquire throughout their education, and the broad realities and the urgent needs of the adult life they must enter." Summing up, President Keppel says: "In the face of falling income and increasing calls from every source, will foundations be able to find the things to do upon which their particular assets can be brought to bear most effectively? While they have their limitations, their natural advantages are many. They can move quickly. They can continue their support past the stage of novelty and publicity appeal. They can act with the long view in sight rather than under the pressure of the moment. They can call upon competent and disinterested advice. They can recognize and encourage excellence and the promise of influence and leadership in the individual, the group or the institution. They can find situations which it is to the general interest, but alas nobody's particular business, to clarify by research and experimental demonstrations. It need scarcely be added that no foundation has ever availed itself of these natural advantages to the full. It is equally true, however, that certain of them in the light of their own experience and of a wider public understanding of their responsibilities are each year giving greater weight to these matters in their decisions."

Medical Manual of Chemical Warfare, 1940 [including] "An Atlas of Gas Poisoning." Great Britain War Office. Paper. Price, 75 cents; 2s. 6d.; "Atlas," separately, 1s. Pp. 104; "Atlas," pp. 15, with 10 plates. New York: British Library of Information; London: His Majesty's Stationery Office, 1940.

This manual describes the physical and chemical nature of certain poison gases, their uses in war, the symptoms caused by them, their recognition and the treatment of the lesions produced. The gases are grouped into vesicants, lethal gases, harassing gases and accidental gases. Of the vesicant or blister gases the mustard gas was the most effective chemical agent used in the war of 1914-1918. The fact that there is no immediate irritation of the skin on contact with the liquid or of the eyes or the respiratory tract constitutes one of the more serious dangers of this gas, as contamination may be unsuspected. Signs and symptoms do not begin to appear until after the lapse of some hours, depending on the concentration of the vapor in the atmosphere and the duration of exposure. Contamination of the eye by a spray or a splash represents one of the gravest dangers in the presence of liquid mustard gas, as permanent damage will result. The major protective measure against mustard gas vapor is the gas mask. In the case of contamination with liquid mustard gas, cleansing of the skin may be effected by a bleach treatment utilizing an ointment or a paste containing calcium chloride and by repeated swabbing with gasoline, alcohol, kerosene, carbon tetrachloride or some other solvent of liquid mustard gas. Of the lethal gases phosgene is the most important and the most toxic. It produces edema of the lungs with rapid and shallow breathing and a progressive development of a bluish red cyanosis, which may deepen to intense violet. The treatment consists of rest, warmth, venesection and oxygen. Most drugs were found to be of no special value. A special chapter is devoted to the symptoms and treatment of gas poisoning not used for offensive purposes but sometimes encountered under war conditions. Such poisons are carbon monoxide, nitrous oxide fumes and screening smokes. The manual gives specific information as to the methods of recognizing poisoning with various gases and the immediate treatment.

The Anatomy of the Eye and Orbit Including the Central Connections, Development, and Comparative Anatomy of the Visual Apparatus. By Eugene Wolff, M.B., B.S., F.R.C.S., Ophthalmic Surgeon, Royal Northern Hospital, London. Second edition. Cloth. Price, $7.50. Pp. 374, with 242 illustrations. Philadelphia: Blakiston Company, 1940.

This concise book on anatomy of the eye, its adnexa and the orbit is an improvement over the first edition, in that not only have sixty-four pages and sixty new illustrations been added but the sections on the visual pathway and its blood supply have been rewritten. Several colored plates, among which are microscopic sections of the retina and optic nerve, have been added. The section on the choroid and retina have been greatly improved, especially the former. The chapters on the bony orbit, embryology and comparative anatomy remain unchanged. In each chapter the author discusses, under the title of practical considerations, the clinical significance of alterations in the various anatomic structures. The final chapters on embryology, postnatal growth and comparative anatomy give a brief adequate survey of the development and growth of the globes and the anatomy of the eyes of lower animals. There is a brief account of the anatomy of the anterior segment as seen with the slit

lamp microscope. The work is recommended as a textbook for graduate study in ophthalmology, though for investigators it cannot replace such textbooks as Whitnall's "Anatomy of the Orbit" or Salzmann's "The Anatomy and Histology of the Human Eyeball."

Vitamins: What They Are and How They Can Benefit You. By Henry Borsook, Ph.D., M.B., Professor of Biochemistry, California Institute of Technology, Pasadena. Cloth. Price, $2. Pp. 193. New York: Viking Press, 1940.

In the foreword to this volume the author states that his reason for writing the book was to present knowledge of the vitamins "in edible form" and without technical jargon. The author has accomplished this purpose in an exceptionally lucid, informative style. For the physician who is interested in "a Cook's tour" of the vitamin field, as it were, this book is recommended. Tables in the appendix show the adult and child requirements of the various vitamins and the vitamin A, B_1, C and B_2 content of uncooked common foods in international units for vitamins A and B_1 and milligrams for vitamin C and B_2 per common measure or ounce. The material contained in the twelve chapters is conceived and handled in such a manner that the reader obtains a considerable amount of fairly accurate information on the vitamins. There are, however, several misstatements which should be corrected in future editions. For example, on page 116 the discussion of vitamin D milk and the statement "But for children even a daily quart of 'vitamin D' milk will not supply the desirable amount of vitamin" are not in accord with recent evidence. The Council on Foods and Nutrition, after a review of recent available evidence, reaffirmed (THE JOURNAL, February 1, p. 413) its previous conclusion that "For children between infancy and adolescence a daily allowance of 750 to 1,000 cc. (about 1½ to 2 pints) of milk containing from 300 to 400 U. S. P. units of vitamin D permits ample retention of calcium and phosphorus." On page 125 the discussion of vitamin E, which the author implies should be called "the anti-miscarriage vitamin," is also far more ambitious than the evidence warrants. In a report sponsored by the Council on Pharmacy and Chemistry (THE JOURNAL, June 1, 1940, p. 2214) it was stated that the claim that vitamin E is of value in the prevention of habitual abortion cannot be accepted because of lack of convincing clinical evidence. Until this evidence is forthcoming, it is misleading to imply that vitamin E prevents miscarriage.

Biological Stains: A Handbook on the Nature and Uses of the Dyes Employed in the Biological Laboratory. By H. J. Conn, Chairman, Commission on Standardization of Biological Stains. Prepared with the collaboration of J. A. Ambler et al. Revised with the assistance of J. T. Scanlan, Anis P. Bradshaw and Mary A. Darrow and Members of the Executive Committee of the Commission. Fourth edition. Cloth. Price, $3.40. Pp. 308, with 5 illustrations. Geneva, N. Y.: Biotech Publications, 1940.

As chairman of the Commission on the Standardization of Biological Stains, on which there are representatives of the American Medical Association and other organizations, Dr. Conn can speak authoritatively about dyes. The assistance of J. T. Scanlan, Anis P. Bradshaw, Mary A. Darrow and members of the executive committee of the commission is acknowledged. This edition marks a definite advance achieved by helpful cooperation of the commission with the American Pharmaceutical Association and the Society of American Bacteriologists. The formulas given in it, sponsored by the commission, in the National Formulary published by the association, and in the Manual of Methods for Pure Culture Study of Bacteria published by the society, have been compared and studied critically with the object of supplying identical formulas in all three places. Much confusion will thereby be avoided. This edition, like others before it, is accurate, concise and to the point. Useful information is not hidden by a forest of words. Thirteen dyes not included in the third edition are described. The dyes are classified into eight groups instead of six, and two useful tables have been added as well as some selected references to the literature. Yet the increase in length over the previous edition amounts to only thirty-two pages, which is important, because this standard book will continue to be in demand by many workers in biologic and medical laboratories and will not be limited to libraries because of size and cost.

The Doctor Takes a Holiday: An Autobiographical Fragment. By Mary McKibbin-Harper, M.D. Cloth. Price, $2.50. Pp. 349, with illustrations. Cedar Rapids: Torch Press, 1941.

This is an informal autobiographic fragment culled from a diary covering nearly two years of travel, another period of four months, and yet other visits in the Near East. The author went to London, Paris, through the Suez Canal, to Egypt, Palestine and India, to which country several chapters of the book are devoted; then to Malaya, China, Japan, Hawaii and San Franciso. She was interested especially in women doctors in these countries and through correspondence had arranged to see certain places and people, although this professional interest was not allowed to interfere with other joys of travel. She describes native customs, religions and superstitions as well as the more obvious and perhaps better known sights to the newcomer. The book is written with a sympathetic understanding of the native customs and environment in which these people live and in which the author was deeply interested.

A Surgeon Reflects. By James Thomas Nix. Cloth. Price, $1.50. Pp. 115. University: Louisiana State University Press, 1940.

This is a series of informal essays by a doctor with thirty years' experience as a surgeon. Three years ago a tired heart impressed on him the uncertainty of life and the futility of constant overwork. Later he was miraculously saved when an airplane in which he was riding burned. A few months later a more serious illness overtook him, and since then he has spent two days a week in camp in the woods on the lower Mississippi and so finally has had time to reflect.

The second part of this small book comprises essays about the profession: your patients and you, the general practitioner, the doctor and the child, patients are always right, doctors and dentists, medical ethics. The first part comprises essays on subjects that concern almost everybody: hope, solitude, difficulties, calamity, friends, ambition, success, longevity, wives and mothers, death. The preface contains a letter from Dr. Rudolph Matas, formerly the author's teacher and chief. The foreword is by Dr. Morris Fishbein. The essays are short, interesting and well written.

Bacteriology in Neuropsychiatry: A Survey of Investigations Concerned with the Specific Role of Infectious and Immune Processes. By Nicholas Kopeloff, Ph.D., Research Bacteriologist, New York State Psychiatric Institute and Hospital, New York. Cloth. Price, $4.50. Pp. 316. Springfield, Illinois, & Baltimore: Charles C. Thomas, 1941.

Rarely has there been less excuse for darkening the pages of a book than the contents of this monograph. Most of the book consists of a superficial summary of a little of the related literature. The discussion of the more common infectious diseases of the nervous system, such as syphilis, meningitis and brain abscess, is surprisingly inadequate whether regarded from a clinical, pathologic or bacteriologic point of view. The relationship of some other sections of the book to the nervous system is not established by the text. In chapters XXI, XXII, XXIII, XXIV, XXV, XXVI and XXVII, on focal infection as a possible etiologic agent (in the functional psychoses), autointoxication as a possible etiologic agent, tuberculous bacillemia in schizophrenia, filtrable forms of the tubercle bacillus in schizophrenia, toxins in schizophrenia, bacteria toxins and allergens as possible etiologic agents in epilepsy, and special properties of the blood and serum of psychotic patients, a series of straw men are set up which the author finds no difficulty in knocking down. The book cannot be recommended.

Landmarks and Surface Markings of the Human Body. By L. Bathe Rawling, M.B., B.Ch., F.R.C.S., Consulting Surgeon to St. Bartholomew's Hospital, London. Eighth edition (new terminology). Cloth. Price, $3. Pp. 98, with 36 illustrations. New York: Paul B. Hoeber, Inc., 1940.

This is a brief volume on topographic anatomy. The terminology employed is that of the British revision of the B N A. In the present times, when military surgery is becoming of increasing importance, the handiness of a brief, accurate, topographic anatomic reference work is apparent. It is of special value in reviewing the topographic anatomy of the extremities. The book has to its advantage a brevity and succinctness of description. It can be recommended as an excellent refresher in certain anatomic details.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

AORTIC REGURGITATION OF RHEUMATIC OR SYPHILITIC ORIGIN IN BUS DRIVER

To the Editor:—A white man aged 33, driver of a passenger bus, was recently referred for an opinion as to whether he should continue his usual occupation. He stated that he had rheumatic fever at 15. A positive Wassermann reaction, as a result of which he is being adequately treated, was found at age 31 on routine checkup by the company; no history of chancre or generalized rash was obtained. The history was otherwise irrelevant. He presented no evidence of definite cardiac enlargement either clinically or fluoroscopically. There was an aortic systolic murmur with an accentuated aortic second sound; there was a suspicion of a diastolic murmur in the second and third interspaces to the left of the sternum. The presence of these murmurs was confirmed later by sound tracings. A capillary pulse was visible under a glass slide placed on the everted lower lip; there was a rather suggestive Corrigan's pulse. Blood pressure was 138 systolic and 78 diastolic. There was no pulmonary congestion, enlargement of the liver or peripheral edema. The usual cardiac functional tests were normal. In other words, there was no clinical or laboratory evidence of a lack of circulatory efficiency. The other ordinary laboratory tests of the urine and blood were normal. An electrocardiogram showed normal sinus rhythm, left axis deviation, ST intervals slightly elevated in leads 2 and 3, T waves slightly inverted in lead 3 and CF-4 negative. Based on these findings, what would be your opinion? Should this man continue driving the bus?

M.D., Pennsylvania.

ANSWER.—In view of the possibility that the patient has syphilitic aortitis behind his slight aortic regurgitation, it is wiser for him to cease driving the bus. Syphilitic aortitis is prone to increase rather rapidly in degree with increasing aortic regurgitation in the course of a few months to a few years and congestive failure may then ensue. More important, however, if syphilitic aortitis is present, is the hazard of sudden death, largely because of the involvement of the mouths of the coronary arteries.

However, on account of the age, the rheumatic history and the slight degree of aortic regurgitation, there may be a rheumatic rather than syphilitic etiology with valvular insufficiency. Slight degrees of chronic rheumatic heart disease are compatible with full activity and long life.

Observation of this case during the next few years will be of vital importance in differentiating between the two etiologic factors. If at the end of a few years there has been no progress in the condition, a rheumatic causation is almost certainly the correct diagnosis. However, especially because of the importance of protecting the public from any unnecessary hazard, it is now wiser to change the occupation of this man to one that will not endanger the public if a cardiovascular accident should occur.

WASSERMANN-FAST SYPHILIS

To the Editor:—For the past two years I have had a woman aged 23 under almost continuous treatment for syphilis. She came to me two months after exposure, and about one month after she had had symptoms of secondary syphilis. She has had alternating courses of ten injections each of neoarsphenamine and bismuth subsalicylate in oil totaling fifty of the former and forty of the latter, given at weekly intervals. At no time has her blood serum reacted negatively, although six months ago a report of 2 plus was received. At present it is still strongly positive. The girl is in better health than she has been at any time for the past two years and presents no signs or symptoms of active infection. Apparently her blood is Wassermann fast, although I believe her to be cured. Please advise as to further treatment and marriage.

M.D., Ohio.

ANSWER.—As a rule a patient responds well to such treatment as outlined when in the secondary stage of syphilis. There must be some explanation for the Wassermann fastness. Is it certain that there is not an involvement of the central nervous system? A lumbar puncture should be made at once, for there is the possibility that that is the explanation for the patient's not reacting more satisfactorily to treatment.

It may be suggested if the lumbar puncture gives negative results that she have another year of continuous treatment, with mapharsen for an arsenical, and that she be given injections of mapharsen, each 40 mg., once in five days for a series of twelve treatments. For the alternate injections bismuth subsalicylate may be used for a course of ten injections. At the end of that time, even if the serum is negative for syphilis, in the succeeding two years she might be given two courses of bismuth a year, and then the positive serologic reaction could be ignored. The chances are that the serologic reaction will gradually change to negative, i. e. provided careful physical examinations, including examination of the cardiovascular system, are negative.

SERUM SICKNESS

To the Editor:—I understand that it is a customary practice in cases of badly lacerated wounds contaminated with soil to give repeated prophylactic injections of tetanus antitoxin every three to seven days until the danger of the development of tetanus is over. Will the repeated injections of horse serum at short intervals, in the average case, keep the patient in a state of constant desensitization to the serum until the normal incubation period of serum sickness has elapsed after the last injection? In other words, can one be sure that this procedure will prevent the onset of serum sickness, with its associated generalized sensitivity, indefinitely so long as these injections are continued at intervals shorter than the incubation time of serum sickness?

T. F. Judefind, M.D., Loma Linda, Calif.

ANSWER.—The incubation period of serum sickness varies from six to twelve days; it may be longer without any known reason; it may be shorter in persons who have previously received injections of normal or immune horse serum, and occasionally without such history. The shorter incubation periods vary from minutes (immediate reaction) to hours or days (accelerated reaction). The length of the incubation period depends within certain limits on the intervals between consecutive injections of serum. Administration of prophylactic injections of tetanus antitoxin at three to seven day intervals will obviously not affect the onset of immediate or accelerated serum reactions with incubation periods shorter than the intervals mentioned. In the case of serum sickness with an incubation period longer than one week, injections given at shorter intervals may in some instances prolong the incubation period by producing a temporary refractory condition, but serum sickness follows eventually.

The procedure as outlined in the query will not prevent the onset of serum sickness indefinitely. Increasing the quantities of injected serum by means of repeated injections may have a tendency to increase the incidence and the severity of serum reactions.

PERTUSSIS VACCINE FOR ASTHMA

To the Editor:—Would you send me any information you may have on the treatment of bronchial asthma in children with whooping cough serum?

J. R. Heafey, M.D., South Norwalk, Conn.

ANSWER.—The only type of case in which there may be reason for considering pertussis vaccine for the treatment of asthma is one in which the patient dates the onset of his asthma to shortly after or during an attack of whooping cough and in which no other adequate cause can be found. Probably about 10 per cent of children relate their first attack of asthma to an infection of the upper part of the respiratory tract. Among such infections, whooping cough is one of the most frequently blamed. In the majority of cases the attack of pertussis is proved to be the precipitating rather than the primary cause of the attack. Most of such children are sensitive to other allergens which are the primary causes of the trouble. In a few cases in which no cause could be determined other than the chronic bronchitis following whooping cough, treatment with pertussis vaccine was given, starting with minute doses and progressively increasing to 500,000 organisms as a final dose, but no beneficial results could be observed. This is in line with the experience of most physicians in the use of vaccine for asthma.

STERILIZATION OF CLINICAL THERMOMETERS

To the Editor:—What type of antiseptic fluid should be used for individual bedside oral thermometers? This is a tuberculosis institution, and we have started keeping the thermometers in small test tubes strapped to the head of the bed. We are wondering if there is a satisfactory solution besides alcohol.

Richard M. Burke, M.D., Clinton, Okla.

ANSWER.—In suggesting a satisfactory fluid for the disinfection of clinical thermometers, a number of things have to be considered. If left at the bedside, the fluid should not be potable, should not be rapidly exhausted by saturation with organic matter or by evaporation, should not be toxic and should not stain or injure the fingers, bed linen or clothing.

For thermometers used by mouth, a 50 per cent solution of isopropyl alcohol is suggested. By it the usual oral flora are killed in less than five minutes. Data regarding the killing of

the tubercle bacillus are not available partly because of the lack of a suitable recovery medium for this organism.

Rectal thermometers present more difficulty. When contaminated by feces they are not sterilized in a reasonably short time by the alcohols, mercurials or other disinfectants safely left at the bedside. It is recommended that after use they be taken to the laboratory or preparation room, where they may be both cleaned and sterilized by soaking for several hours in the potassium dichromate–sulfuric acid mixture commonly used for cleaning chemical glassware. Because of improved methods of testing, confidence in formerly accepted methods of "chemical sterilization" has been destroyed. More research is needed.

ANOSMIA FOLLOWING CEREBRAL INJURY

To the Editor:—A man aged 34 was involved in an automobile accident six weeks ago and as a result of a blow on the head was rendered unconscious for about two hours. On recovering consciousness he suffered constant throbbing headaches for about sixteen days. Vision was blurred in all fields and there was complete absence of the senses of taste and smell. Reflexes were normal; the blood pressure was 120 systolic and 78 diastolic; the heart, lungs and general physical condition were within normal limits. A roentgenogram of the skull and the cervical vertebrae showed no fractures. Lumbar puncture showed an initial pressure of 160, and the fluid was clear. With rest in bed, a diminished intake of fluids and dark glasses were employed, the headaches disappeared and the ocular symptoms all vanished except for a slight blurring in the straight ahead fields. The optic nerve shows no secondary atrophy. However, there has been no sign of returning taste or smell. I would appreciate your opinion as to whether you think these senses will return and also if there is any thing which can be done to hasten their reappearance.

William G. Thompson, M.D., Andover, Mass.

ANSWER.—No statement is made as to the date of the injury. When anosmia is the result of an injury as described, the return of the sense of smell rarely takes place. It is also probable that the loss of smell has to do with the seeming loss of taste. There is no satisfactory treatment for this loss of smell. Probably there was no hemorrhage pressing against the olfactory nerve inside the skull; otherwise blood would probably have been found in the spinal fluid. For that reason the injury to the olfactory nerve was probably at the exit of the nerve from the skull. Potassium iodide in moderate doses may be tried.

HAZARDS OF DEGREASING AGENT

To the Editor:—I will appreciate information regarding a cleaning solution, made by the Mechanical Process Company for cleansing refrigerator plates, called D'Oilene A. Can a patient have symptoms of chronic poisoning, such as nausea, vomiting, headache and general weakness, from handling this solution? What is the composition? M.D., Massachusetts.

ANSWER.—D'Oilene A, manufactured by the Mechanical Process Company of South Orange, N. J., consists chiefly of a chlorinated hydrocarbon similar to carbon tetrachloride. It is a widely used degreasing agent for metal parts and by no means is limited to the cleaning of refrigerator plates. The symptoms described probably represent the acute effects of materials such as D'Oilene A rather than chronic effects.

In acute poisoning, evidences of severe gastrointestinal irritation, hepatitis and possibly nephritis may arise. No work should be performed in vapors of this cleaning agent when the concentration exceeds 200 parts per million of air throughout the shift period, although 1,000 parts per million are not known to be dangerous for short exposures, such as one-half hour. Protection customarily is procured through the use of tanks with water jackets which condense the vapors at a level below the top of the tank. Otherwise, protection may be procured through the installation of appropriate exhaust systems.

IRRITATION OF SKIN FROM SUBSTANCES USED IN WELDING

To the Editor:—I am seeking information on the possibility of severe generalized dermatitis occurring in welders. Various references mention lead poisoning, respiratory disorders and diseases of the eye but nothing concerning dermatitis. John M. Walker, M.D., Dubuque, Iowa.

ANSWER.—It is claimed that most welders have burns and photoerythema at some time during the course of their trade experience. Dermatitis due to the wearing of various protective equipment, such as leather gauntlets and rubber gloves, has been described. This, however, is a hypersensitivity to the particular article of clothing rather than any to part of the welding process. Certain metals used in welding may volatilize and give rise to cutaneous irritants. This is not usual, however. One could conceive that volatilization and condensation on the skin or absorption through the respiratory tract of substances either being welded or constituents of the welding process might cause such trouble. The foreign literature makes more mention of such problems than the American, and the problems mentioned are not well founded in many instances.

CHLORIDE CONTENT OF WATER AS INDEX OF POLLUTION

To the Editor:—According to "Standard Methods of Chemical Analysis," by Scott, and to other textbooks, the chloride content of potable water is a good indication of the presence of sewage and one of the best indications as to the possible pollution of that water, especially in places in which the normal chloride content is known and the test is used as a check. I am unable to find any literature on this in the limited references I have available, and I should like to know how reliable this test might be. David Hoehn, M.D., Fairbanks, Alaska.

ANSWER.—The chloride content of water is not a wholly dependable indication of pollution by sewage. It is true that water high in chlorides must be looked on with suspicion unless satisfactory explanation for the presence of chlorides in quantity can be made, such as proximity of the source to the sea or to some other source of brine. A more reliable index of pollution would be a bacterial analysis for coliform organisms, which are indicative of contamination by sewage. Large quantities of chlorides in water with much free and albuminoid ammonia and nitrites would strongly suggest pollution by sewage.

WATER SOFTENING

To the Editor:—Can you inform me whether or not there is any harm in drinking water that is run through a water softener? Softening, I believe, changes the calcium carbonates to potassium carbonates. Is there a danger of an excess of potassium salts? At one time there was some discussion of potassium salts being the cause of cancer. Is there any truth in this? Edgar A. Schoenecker, M.D., Lake Mills, Wis.

ANSWER.—In zeolite water softeners the calcium of dissolved calcium bicarbonates is exchanged by sodium in the zeolite. Within normal limits there is usually no objection to this method of softening a domestic water supply. When the amount of dissolved salts is high this exchange may result in the water becoming more chemically active on such metals as aluminum, brass or iron than it was prior to softening. The U. S. Treasury Department standards for drinking and culinary water used on interstate carriers limits the carbonates of sodium and potassium taken together as normal calcium carbonate at 50 parts per million. There is no scientific evidence that potassium salts can cause cancer.

DETERMINATION OF GONADOTROPIC SUBSTANCES IN BLOOD

To the Editor:—I have been attempting the determination of gonadotropic substances in the blood according to the method outlined in Kracke and Parker's Textbook of Clinical Pathology, second edition, page 626. The technic calls for the injection of the serum into immature female white mice from 15 cc. of blood in 0.5 to 1 cc. doses. I presume that it makes no difference whether it is given subcutaneously or intraperitoneally, though I have given it twice daily subcutaneously. This caused the death of the mouse by the second day in the two that have been injected, with no gross changes demonstrable at autopsy. The serum was slightly hemolyzed when used. Can you tell me how we may avoid this?

M.D., Minden, Neb.

ANSWER.—The method recommended in the textbook has been adapted from Fluhmann's technic. Untoward results from injecting 0.5 cc. of serum subcutaneously into the back of the test animal have not been encountered in a considerable experience; 1 cc. occasionally will be injurious. The serum should be fresh and not hemolyzed. In cases of pregnancy it should be diluted with saline solution.

CHRONIC CYSTIC MASTITIS AND BREAST CANCER

To the Editor:—In The Journal, March 15, 1941, page 1186, in answer to a query, the statement is made that, if the clinical diagnosis of chronic cystic mastitis is correct, then one can be reasonably certain that the patient has little chance of having a carcinoma in the breast now or at a later date. On the basis of my observations, published in *Surgery, Gynecology and Obstetrics* (71:257 [Sept.] 1940) a woman with chronic cystic mastitis (proved by biopsy) has three times as great a chance of developing carcinoma as does the average woman in the Massachusetts population. In women having chronic mastitis and related lesions in the age group from 30 to 49, the breast cancer attack rate is eleven and seven-tenths times greater than it is for the total Massachusetts female population. Consequently I feel that one is forced to the conclusion that the presence of chronic cystic mastitis is conducive to the development of breast cancer. Shields Warren, M.D., Boston.